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ABSTRACT

The School Planning, Evaluation, and Communication System (SPECS) is an overall design for districtwide program assessment and development. It is both a way of interrelating planning evaluation of individual programs and a way of comparing the outcomes of all district programs with the district's community-defined educational goals. Component Three of the five SPECS components focuses on the application of SPECS to instructional program planning and evaluation. Section One discusses the underlying rationale of the component, major objectives, and its relation to other components. The second section outlines the process a district might use in preparing for implementation. Section Three presents alternative formats for documenting instructional program's desired and actual outcomes, processes, and inputs. It includes descriptions and simulated examples of both the SPECS documents and several comparable documents developed or used during the past six years by teachers in the SPECS field-test sites. Section Four explores some of the issues related to combining, summarizing, and using data from multiple instructional programs to improve curricular scope and sequence. The final section of the booklet describes some of the potential benefits and spin-off effects of the SPECS approach to instructional program planning and evaluation. (Author/JM)

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SPECS 3

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Component Three:

Instructional Program Planning, Evaluation, and Communication

Barbara Cole
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Harold E. Walker

EA 011 376

This booklet was developed by the staff of the SPECS Program within CASEA, the research and development unit of the Center for Educational Policy and Management (CEPM) at the University of Oregon. CEPM is supported in part by funds from the National Institute of Education (NIE). Opinions expressed in the booklet do not necessarily reflect policies or positions of either CEPM or NIE, and no official endorsement by either organization should be inferred.

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Preface

SPECS is a comprehensive set of procedures and materials designed to facilitate program planning and evaluation in schools. Initial development of the system began in 1969. It was implemented on a pilot basis in South Lane School District, Cottage Grove, Oregon between 1970 and 1973. The materials were revised during 1974 and 1975.

To help personnel in a district learn more about SPECS, plan for its implementation, and begin to make any or all of its five components operational, several different kinds of materials have been developed. They include an illustrated monograph entitled **SPECS: What It Is and What It Does**,[1] a series of implementation booklets relevant to each component of the system, and a set of operational forms for documenting program plans and results.

The focus of this particular booklet is on Component Three and its application to instructional program planning and evaluation. Section One discusses the rationale behind Component Three, its major objectives, and its relation to the other four components of the system. The second section outlines the process a district might use in preparing for implementation. Section Three presents alternative formats for documenting an instructional program's desired and actual outcomes, processes, and inputs. It includes descriptions and simulated examples of both the SPECS documents and several comparable documents that have been developed or used during the past six years by teachers in the SPECS field-test sites. Section Four explores some of the issues related to combining, summarizing, and using data from multiple instructional programs to improve curricular scope and sequence. And the final section of the booklet describes some of the potential benefits and spin-off effects of the SPECS approach to instructional program planning and evaluation.

Throughout the pilot and field tests, a number of educators have contributed greatly to increasing the usability of SPECS for other instructors. Junior high school science teacher Dave Hoeger was responsible for preparing the many simulated examples while numerous teachers around the country have provided feedback on the materials. Terry Eidell, formerly with CEPM, provided initial directions for SPECS.

Lloyd DuVall and Stephanie Henderson, both Development Team members, contributed significantly with editorial suggestions while Mary Ann Cheshire endured typing and copying numerous drafts.

Finally, without the support of the Office of Education (OE), the National Institute of Education (NIE), this planning and evaluation assistance provided to school personnel would not have been possible.

[1]John M. Nagle and Harold E. Walker, **SPECS: What It Is and What It Does**, (CASEA, Center for Educational Policy and Management, University of Oregon, Eugene, Oregon), 1975.

Contents

Preface 1

1. **Rationale** 5
   - The Relationship 5
   - Major Objectives 5

2. **Preparing for Implementation** 9
   - The Task Force 9
   - Exploring Component Three 9
   - Relevance to the District 9
   - Recommendations 10
   - Coordination 10
   - Inservice 10

3. **Writing Program Objectives and Measuring Achievement** 15
   - Defining Program Objectives and Achievement Indicators 15
     - "Legitimate" Achievement Indicators 15
     - Writing Achievement Indicators 16
     - Sequencing Achievement Indicators 16
     - The Decision Rule 16
     - Three Domains of Learning 18
   - Instructional Materials 20
     - Record of Instructional Program Objectives 22
     - Instructional Program Summary Plan 31
     - Weekly Lesson Plans 36
     - Record of Student Performance 41
     - Instructional Program Summary Report 45
   - Individualizing Instruction 52
   - Program Assessment 57

4. **Summarizing Outcome Data** 61

5. **Benefits** 71
   - A Clearly Defined Curriculum 71
   - An Accurate Performance Record 71
   - Increased Communication 71
   - Use of Physical Resources 71
   - Individualized Instruction 71
   - Teacher Defined Minimum Objectives 71
   - Professionalism 71
   - **Summary** 72

Jenny Loughlin
Age17
Photograph (enlargement)

1. Rationale

The Relationship

SPECS consists of five components of activity. As Figure 1 indicates, the first three components constitute its operating subsystem and are primarily the responsibility of a school district's professional staff of teachers and administrators. Taken together, they encourage systematic program planning and evaluation and the production of explicit, documented information about the "what is" state of a district's "operating programs" — what they are, how they are interrelated, their plans, and their results. Component Four, the monitoring subsystem of SPECS, solicits views from representatives of the district's community on the "what is preferred" state of district programs. And Component Five, the policy-making subsystem of SPECS, encourages the district's board of education to use this documented information about "what is" and "what is preferred" as a basis for identifying and resolving the district's most critical needs.

The overall systems design of SPECS interrelates the views of a district's professional staff, lay citizens, and school board members. For example, program planning and evaluation by the district's teachers and administrators, and broad goal definition by representatives of its larger community are separate and distinct activities. There is no prescribed order in which they must occur, and neither has more intrinsic worth than the other. In addition, although both sets of activities generate information that is essential to assessing district goals and identifying high priority needs, it remains for a district's board of education to identify and resolve the most critical discrepancies between program outcomes and community expectations.[2]

[2]See the monograph entitled **SPECS: What It Is and What It Does** for a more detailed description of the conceptual framework, five components, and basic intentions of SPECS — School Planning, Evaluation and Communication System.

Major Objectives

The overall systems design for SPECS encourages explicit collection and use of three kinds of information about a school district:

1) Information designating the **current state** of the district;
2) Information appraising its **preferred state**; and
3) Information prescribing **how best to reduce important discrepancies between "what is" and "what is preferred."**

Similarly, at the level of individual programs and activities, Component Three encourages teachers and administrators to generate, document, and use these three kinds of information for planning, evaluating, and replanning individual programs.

SPECS encourages the staff of a program to prepare, prior to implementation, a written plan describing the program's preferred state, including a description of its **desired outcomes** for clients, the specific **processes** that will be employed to help clients achieve those outcomes, and the inputs or budgets that will be required to mount those processes. Then, as the program's planned processes are actually being implemented, Component Three encourages program staff to monitor and document the program's actual state — its **actual outcomes** for clients, the **actual processes** carried out, and **actual inputs** or **expenditures**. And finally, for both formative purposes during implementation and summative purposes after implementation, Component Three encourages program staff to evaluate and refine the program by analyzing discrepancies between "what is" and "what is preferred" and by developing workable strategies or prescriptions for reducing those discrepancies. (See Figure 2.)

In addition to facilitating planning and evaluation at the level of individual programs, Component Three also encourages district staff to use summarized information about multiple programs as a basis for:

1) Communicating with each other and with students, parents, and citizens about program outcomes, process, materials, and resources;
2) Improving relationships among noninstructional, support programs; scope and sequence among instructional programs; and district-wide articulation among all programs; and
3) Preparing, as input to Component Five, a summarized, annual report on the "what is" state of all programs in the district.

In summary, the five major objectives of Component Three are:

1) To provide district staff members with both detailed and summarized information for **planning** individual programs.
2) To provide district staff members with information which will enable them in **implementing** their programs.
3) To provide district staff with information which will assist them in **evaluating** the results of their programmatic efforts.
4) To assist district staff in **examining the interrelationships** in the curriculum.
5) To provide information which would aid district staff **in revising** their plans for the future.

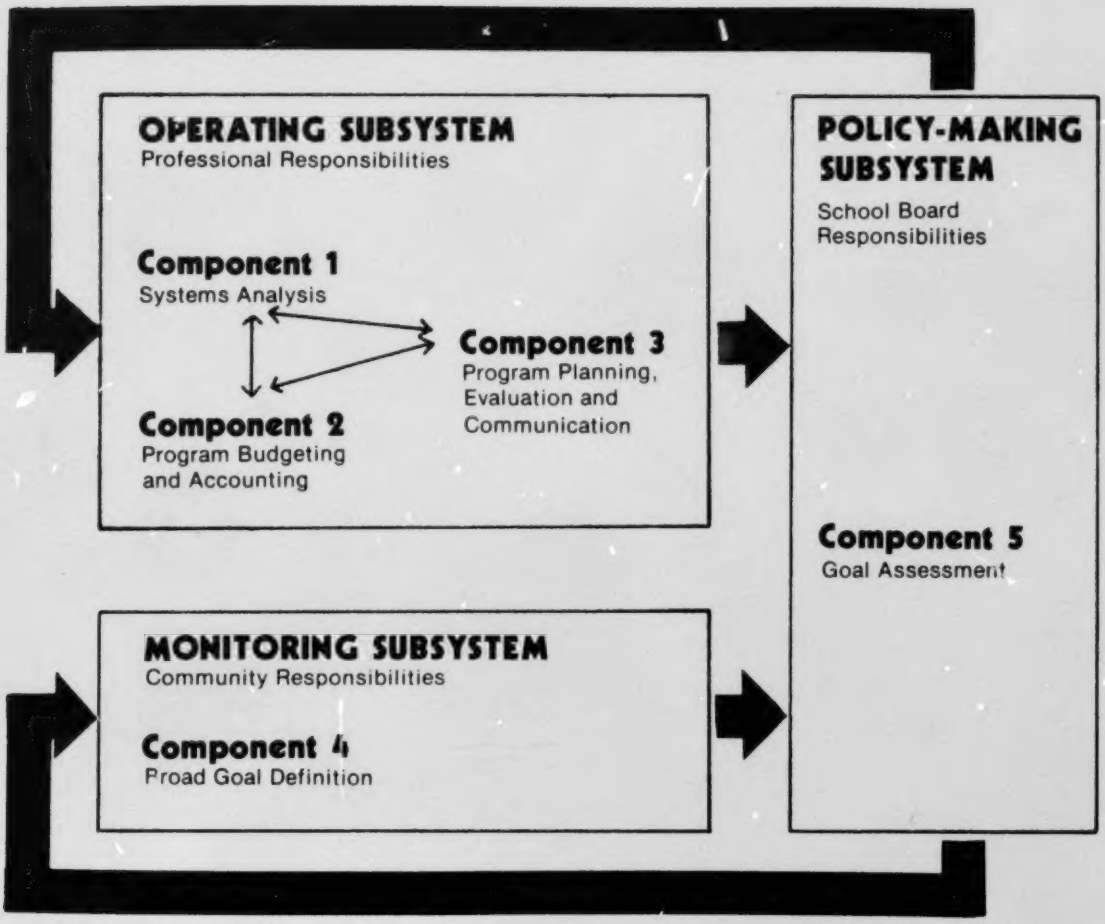
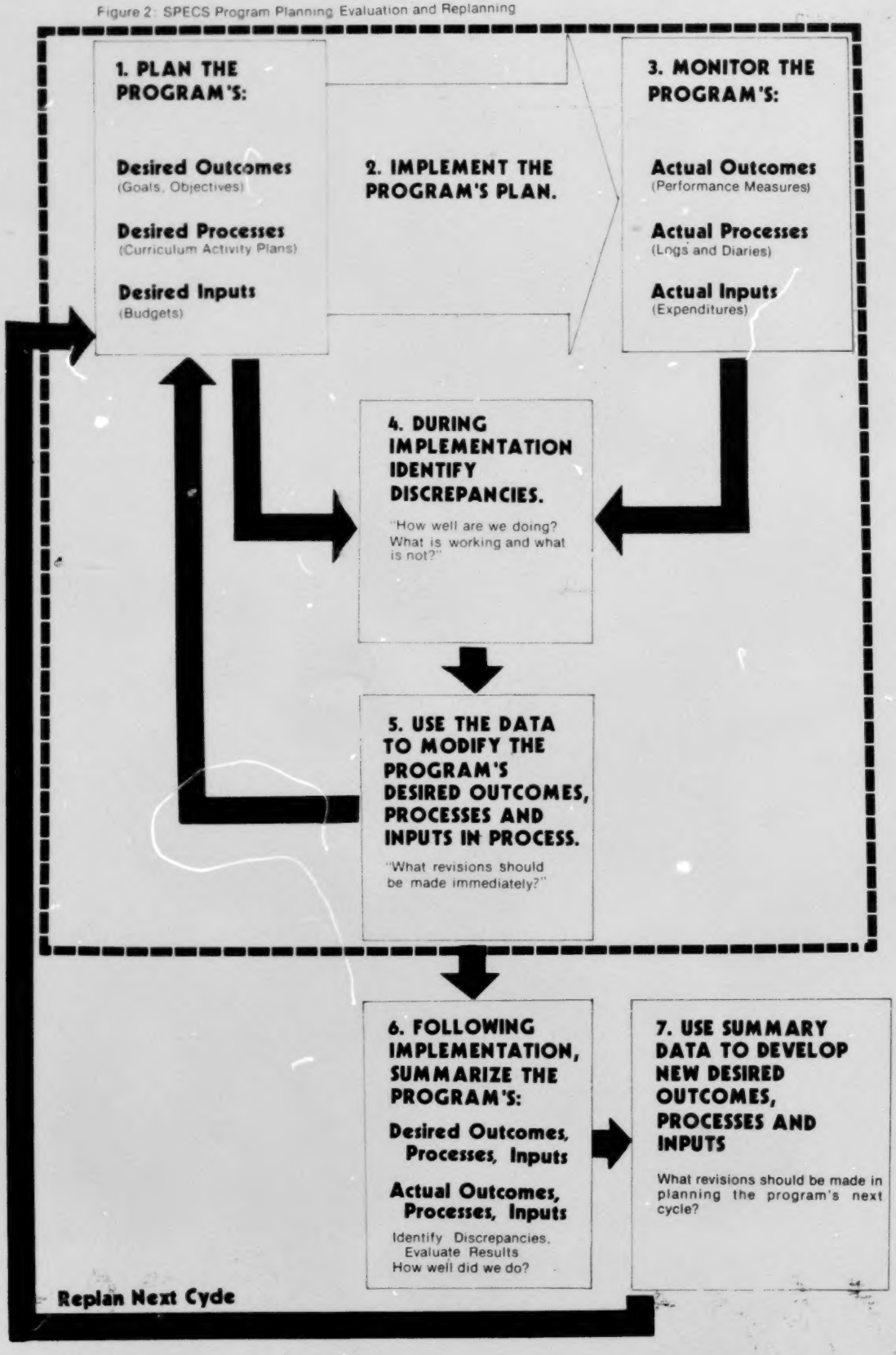


Figure 1: The SPECS Design

Figure 2: SPECS Program Planning Evaluation and Replanning


1. PLAN THE PROGRAM'S:
Desired Outcomes
(Goals, Objectives)
Desired Processes
(Curriculum Activity Plans)
Desired Inputs
(Budgets)
2. IMPLEMENT THE PROGRAM'S PLAN.
3. MONITOR THE PROGRAM'S:
Actual Outcomes
(Performance Measures)
Actual Processes
(Logs and Diaries)
Actual Inputs
(Expenditures)
4. DURING IMPLEMENTATION IDENTIFY DISCREPANCIES.
"How well are we doing? What is working and what is not?"
5. USE THE DATA TO MODIFY THE PROGRAM'S DESIRED OUTCOMES, PROCESSES AND INPUTS IN PROCESS.
"What revisions should be made immediately?"
6. FOLLOWING IMPLEMENTATION, SUMMARIZE THE PROGRAM'S:
Desired Outcomes, Processes, Inputs
Actual Outcomes, Processes, Inputs
Identify Discrepancies, Evaluate Results
How well did we do?
7. USE SUMMARY DATA TO DEVELOP NEW DESIRED OUTCOMES, PROCESSES AND INPUTS
What revisions should be made in planning the program's next cycle?
Replan Next Cyde

Owen
Age 9
Pencil and Crayon

8.

2. Preparing for Implementation

Section Two of this booklet focuses on the specific procedures which a district would follow in preparing to implement Component Three. Although it is unlikely that two educational organizations would proceed with implementation in exactly the same way, this set of procedures has been included with the understanding that it could be adapted to fit a particular organization's needs.

The Component Three Implementation Flowchart shows in a step-by-step approach, the unique tasks of implementation. In addition, a calendar is included which suggests general dates for each specific task to be performed. Finally, detailed information is provided for each of the tasks.

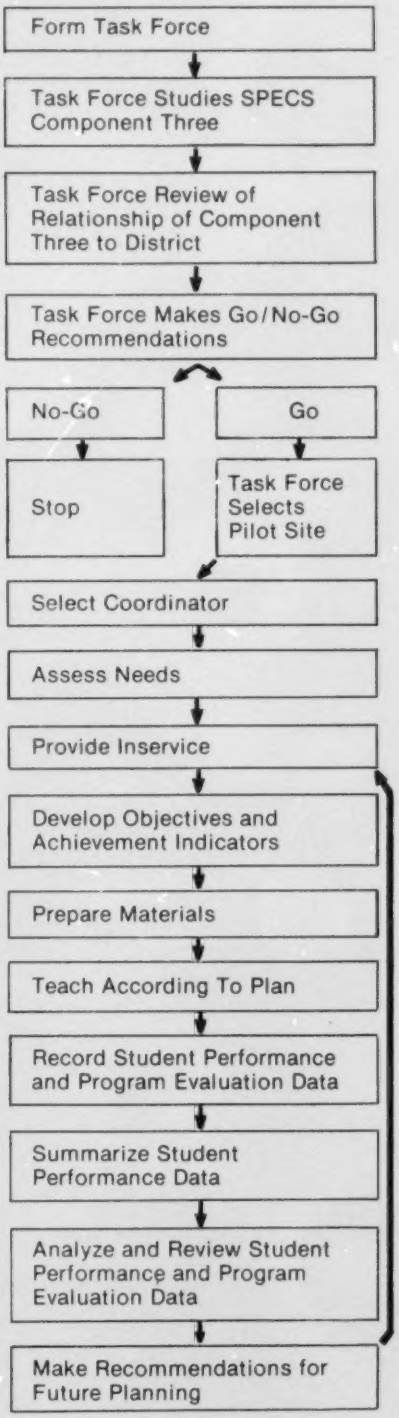
The Task Force

The Task Force should be comprised of central office (curriculum) representatives, teacher organization representatives, building administrator representatives, and teachers who may be particularly interested in piloting such a program. Careful attention should be given to the selection of Task Force members so as to ensure congenial and productive working relationships.

Meetings should be held frequently; however, they should not be held in such rapid succession that Task Force members have little time for study, communication, and reflection.

By the second Task Force meeting, the specific task or tasks should be formulated to ensure that all Task Force members have a common goal. The superintendent or a delegated person may provide the Task Force with a specific task along with guidelines and a time schedule for achieving their goal, or the Task Force may be provided with only an outline of their responsibilities. In the former case, a portion of the work has already been done; in the latter, time must be provided for clarifying the task and deciding how to best achieve the desired end. If possible, the task should be stated behaviorally in order to allow for its evaluation by Task Force members and nonmembers.

COMPONENT THREE IMPLEMENTATION FLOWCHART


Form Task Force
Task Force Studies SPECS Component Three
Task Force Review of Relationship of Component Three to District
Task Force Makes Go/No-Go Recommendations
No-Go
Go
Stop
Task Force Selects Pilot Site
Select Coordinator
Assess Needs
Provide Inservice
Develop Objectives and Achievement Indicators
Prepare Materials
Teach According To Plan
Record Student Performance and Program Evaluation Data
Summarize Student Performance Data
Analyze and Review Student Performance and Program Evaluation Data
Make Recommendations for Future Planning

COMPONENT THREE IMPLEMENTATION CALENDAR

August
Form Task Force

August
Task Force Studies SPECS Component Three

August - September
Task Force Review of Relationship of Component Three to District

September - October
Task Force Makes Go/No-Go Recommendations

October - January
If Go — Plan for Implementation

January - May
Teach According to Plan

May
Record Student Performance and Program Evaluation Data

May - June
Summarize Student Performance Data

June
Analyze and Review Student Performance and Program Evaluation Data

June
Make Recommendations for Future Planning

July - August
Recycle (Put changes into effect and begin with planning process again.)

Exploring Component Three

A basic understanding of the theoretical framework of Component Three and a thorough working knowledge of the SPECS instructional materials are necessary requisites for the Task Force. Until Task Force members have

acquired this knowledge, they will probably not be able to make recommendations. To help them gain this understanding of SPECS and particularly Component Three, several recommendations are made. First, members of the Task Force should carefully read the monograph, **SPECS: What It Is and What It Does,**[3] which will help them to gain understanding of SPECS as a total system. Next, the Task Force members should familiarize themselves with the SPECS instructional materials which are specifically related to Component Three of SPECS.[4]

A Component Three workshop planned by a SPECS consultant or by other personnel who are familiar with SPECS might also help Task Force members to gain further understanding of the system. In addition to providing information and answering questions, the consultant or workshop leader could also aid the Task Force in clarifying their expectations and understandings for the task ahead.

To implement Component Three, several decisions must be made by those involved in the implementation. The nature of these decisions may depend on the personalities, the experience, and the responsibilities of those involved in the planning and implementation. For example, a teacher who is interested in implementing Component Three in the classroom may need different kinds of support (moral or budgetary) from the administrator who would like to implement it in a department or throughout an entire school. Listed here are several questions which should be addressed during the decision-making process.

1. Why is the district interested in implementing Component Three? Does the interest stem from curricular, management, or some other kinds of needs?

2. What are the expected changes in student performance or teacher behavior as a result of Component Three?

3. Should Component Three be implemented on a pilot basis by only one department, grade level, or team, or should it be treated as a permanent districtwide activity? If a pilot is selected, for what period of time should the activity be continued before being re-evaluated?

4. When should the implementation begin? At the beginning of school? At semester change? When new personnel are hired?

5. What materials will be needed? How will teachers learn to use them? Can one teacher adequately instruct another? What kinds of inservice will be necessary?

6. Will district paraprofessionals and administrators be participating in the planning sessions or workshops which are designed to aid teachers in learning to use SPECS? Will all teachers participate?

7. What sources of funding will be used to obtain the necessary materials and implement the program?

8. How will the data generated by Component Three be used?

Relevance to the District

Prior to making recommendations regarding the implementation of Component Three, the Task Force should become aware of any other innovative programs which are either being planned or are currently operating in the district. For example, a new reading program may currently be in the pilot stage in an elementary school with plans calling for expansion of the program to all schools at a later date. The Task Force must consider how the adoption of SPECS will affect those teachers who are also attempting to adjust to the new reading program, and the efforts which must be made to interface SPECS with these other planning efforts.

Furthermore, the Task Force should be aware of other programs which have been both successful and unsuccessful in the district. Were they in any way related to SPECS? Why did they succeed or why did they fail? If they failed, have plans been made to ensure that the same situation will not reoccur when SPECS is introduced in the district?

Economic and political issues also play a role in the adoption of new programs. For example, if the Board has recently trimmed the budget for curriculum planning, it may be difficult to obtain even minimum funding for piloting a new program such as Component Three.

A review of recent planning and evaluation efforts should provide the committee with information about the effectiveness of those efforts. For example, if the district has already adopted a comprehensive planning and evaluation program which is successful to the satisfaction of those involved, it would be both unreasonable and undesirable to change to another system.

Recommendations

After their initial study of SPECS as it relates to their district, the Task Force would be asked to make recommendations to the Superintendent. The initial decision made by the Task Force will most likely be a recommendation to continue or discontinue further exploration of SPECS. At a later time, however, the Superintendent may ask for more specific recommendations regarding SPECS. For example, the Task Force might suggest that SPECS teachers continue planning and evaluating at the kindergarten to

[3] John M. Nagle and Harold E. Walker, **op.cit.**

[4] An explanation of these materials and examples of how they can be used is included in Section Three of this booklet.

third-grade level for the next year or semester. Or the Task Force might recommend that SPECS activities be expanded to include other programs. Recommendations made by the Task Force in Emerald School District appear on page 12.

Coordination

If a decision has been made for districtwide implementation, a person should be selected who can provide the leadership necessary to coordinate the districtwide effort. Since the Coordinator will serve as both a leader and resource person, it is necessary that s/he possess certain knowledge, particularly in the area of curriculum development. In addition, it is most important that the Coordinator thoroughly understand the conceptual framework of SPECS as well as the fine points of the implementation strategy. Therefore, the Coordinator should be familiar with **SPECS: What It Is and What It Does**[5] as well as the material contained in this booklet. Since Component Three of SPECS requires the adoption of an objective-based curriculum, it is also important that the Coordinator have prior experience in writing behavioral or performance objectives for the instructional area.

Inservice

In order to decide what kinds of inservice and workshops will be necessary, the district's needs must be assessed. That is, the extent of district personnel's prior experience and knowledge must be taken into consideration in planning the inservice. Such an assessment could be conducted either formally or informally by members of the administration and faculty, the district's curriculum committee, or the Component Three Task Force. Although the SPECS Coordinator may or may not be responsible for the assessment, it is important that the Coordinator be thoroughly involved since one of the purposes of the assessment is to plan for later inservice sessions.

In order to determine what items to include in the upcoming inservice, several questions should be addressed: Have teachers previously written goals and objectives? What kind of training have they had in doing so? Does a set of districtwide definitions exist which deals with terminology related to goals and objectives? Are teachers familiar with the terms "goal," "objective," and "achievement indicator?" To what extent have teachers been exposed to other planning and evaluation systems? How were these systems similar to or different from SPECS?

Answers to these and other relevant questions should provide the SPECS Coordinator with a basis for planning the inservice agenda. For example, assume that it was found that all teachers who would be involved had had considerable experience in writing goals and objectives. In this case the Coordinator could plan less time for this portion of the workshop than if the teachers had had no prior experience in defining their objectives. Or assume that while some of the teachers had had prior experience in a similar system, others had not. In this case, the Coordinator might choose to schedule one workshop for the entire group with additional inservice for some portion of the teachers.

The Component Three workshop agenda used by Emerald School District is presented on page 13.

[5]John M. Nagle and Harold E. Walker, **SPECS: What It Is and What It Does**, (CASEA, Center for Educational Policy and Management, University of Oregon, Eugene, Oregon), 1975.

MEMORANDUM

To: Emerald School District Superintendent

From: SPECS Task Force

Re: Recommendations for Implementing Component Three

Date: October 19, 19__

We, the SPECS Task Force, make the following recommendations:

1. Component Three of SPECS should be implemented in a pilot site for one year. At the end of that year, a review should occur which assesses the problems and progress that have occurred. This review should specifically answer such questions as "Has student performance increased? Have planning efforts been more productive? Has communication increased among participating parties?"

2. A pilot site should be chosen from one of the following:

   a. Good Elementary School, K-3 Math Program
   b. Lincoln Junior High School, Science Program
   c. Blackwood Senior High School, Alternative General Education Program

   The basis of this recommendation comes from the interest indicated by these three groups to review their planning and evaluation efforts during the next year.

3. Financial assistance will be needed to implement such a program. We recommend that this assistance be limited to the discretionary funds provided in the district's curriculum budget.

SPECS Component Three Workshop Agenda

I. Relating Component Three to Other Four SPECS Components

- A. Prerogatives of Professionals and Community
- B. Five Components of SPECS
- C. Major Objectives of Component Three

II. Learning a New Language (Component Three Terminology)

- A. Leading Terminology
  1. Desired Outcomes
  2. Actual Outcomes
  3. Desired Processes
  4. Actual Processes
  5. Desired Inputs
  6. Actual Inputs
- B. Subordinate Terminology
  1. Achievement Indicator
  2. Program Element
  3. Program Objective
  4. Decision Rule
  5. Critical Terminal Objective

III. Introducing the Materials

- A. Record of Instructional Program Objectives
- B. Program Summary Plan
- C. Weekly Lesson Plans (Up to One Program)
- D. Weekly Lesson Plans (Up to Three Programs)
- E. Record of Student Performance
- F. Program Summary Report

IV. Using the Materials

- A. Writing Objectives and Achievement Indicators
- B. Recording Data
- C. Summarizing Data
- D. Assessing Results

V. Deciding the Future--Next Steps

Artist Unknown
Age 7
Crayon

14.

3. Writing Program Objectives and Measuring Achievement

Defining Program Objectives and Achievement Indicators

It is important to remember that the purpose of writing objectives is to state the desired outcomes of a school program in such a way that data about the program's actual outcomes can be collected and used to evaluate and replan the program. Admittedly, the question of what constitutes desirable outcomes of programs can be viewed from a number of perspectives, but, by limiting one's attention only to instructional programs in a school or school district, the ultimate goal can be thought of most usefully in terms of changes effected in learners.

For example, one of many possible program objectives for a first grade class might be that all students "learn the letters of the alphabet." Stated in a slightly different way to emphasize the desire for change, the objective might read, "Assuming that students have no knowledge of the alphabet when they enter first grade, the change desired is that all students have full knowledge of the alphabet by the time they complete first grade."

However, even though this objective expresses the desired outcome in terms of changes in students, the phrase "learn the letters of the alphabet" doesn't say enough to allow measurement of its achievement at the end of first grade. That is, how could one measure — and therefore be able to evaluate — whether or not the student who completes first grade has actually "learned the letters of the alphabet?" Accordingly, it is necessary to define exactly what is meant by "learn."

Words such as "learn," "know," and "appreciate" are often used very loosely to symbolize extremely complex processes. The result of this practice is that, when such words are used to express educational objectives, students cannot, in any definitive way, demonstrate that the objectives have indeed been achieved.

In SPECS, **achievement indicators** are used to identify those particular criteria that we can use to make inferences about how students have changed over time. That is, an achievement indicator is essentially defining what is required before one is willing to infer that a student has or has not achieved a particular program objective.

Note two critical implications of this. First, achievement indicators must be both **observable** and **measurable**. And second, the conclusions drawn are still only **inferences** which are based upon observable acts. We can never know with certainty the degree to which a student's knowledge, skills, and attitudes have changed; we can only observe behaviors — on tests, in classrooms, outside school, in simulated situations, and so forth — and then make educated guesses about the degree to which those behaviors imply change or learning.

For example, assume now that one of the objectives for the first grade class is "write in order from 'a' to 'z' the twenty-six letters of the alphabet." The earlier ambiguity of the behavior to be observed for evaluative purposes — that the student has "learned" — has been markedly reduced. If, at the end of first grade, a student was asked to "write in order from 'a' to 'z' the twenty-six letters of the alphabet," there would be little disagreement as to whether s/he did or did not achieve the objective. The student either could or could not perform the specified behavior. Therefore, in order to determine the degree to which program objectives have been achieved, the particular behaviors that will be used to make inferences about how student performance has changed must be identified. Thus, the need for writing achievement indicators for the objectives is apparent.

"LEGITIMATE" ACHIEVEMENT INDICATORS

Returning once again to the first grade setting, we find that besides being observable and measurable, two more decisions must be made in order to write a legitimate achievement indicator.

First, the specific **conditions** that will prevail when the student exhibits the desired behavior must be explicit. That is, for the objective "to write in order from 'a' to 'z' the twenty-six letters of the alphabet," the way in which the student would do this had to be identified. Would it be done in class or at home? Alone or in a group? Within certain time limits? These are the kinds of questions one must ask in order to establish the context in which the evaluative process will occur.

Second, the **quality** of each desired behavior must be specified — in this case the number of letters the student must correctly write before the teacher is willing to say the student has achieved the objective. This discussion has suggested that the student must be able to write all twenty-six letters and that they must all be in perfect order. If so, the **level of quality** is 100% on both dimensions. One might, however, be satisfied if the student could simply write twenty of the letters in order by the end of first grade, in which case the level of quality would change. This freedom to adjust the level of quality provides a teacher with several ways of adapting program objectives to individual differences among students.

An example of one possible achievement indicator for the class of first graders will now be examined and the major components of the indicator will be identified.

"Given a blank sheet of paper and no assistance from other persons or printed materials, the student will, by the end of first grade, be able to print all the letters of the alphabet in order from 'a' to 'z' within five minutes."

First, the **observable, measurable act** required of the learner is clearly specified: "will . . . print the letters of the alphabet." Second, the **conditions for evaluation**, in other words the conditions under which competence is to be demonstrated, are explicit: "Given a blank sheet of paper and no assistance from other persons or printed materials." And third, the **level of quality** is specified: "all the letters of the alphabet in order from 'a' to 'z' within five minutes." Therefore, a statement must meet all three of these criteria if it is to be "legitimately" identified as an achievement indicator.

At no time in SPECS is it stated that to be "legitimate," an achievement indicator must include some indication of the quality of performance required for a **total class** of learners. That is, there is no argument for predictions of group performance on a program objective such as "90 percent of the students," or "half the students," and so forth, since such predictions will inevitably be more intuitive than scientific.

It is also important to remember that, to be meaningful, achievement indicators cannot be written in isolation; they must be related to program objectives. In fact, the achievement indicator is a restatement of a program objective and is used to measure a student's achievement of the objective.

Therefore, in review: A statement is a "legitimate" achievement indicator in SPECS, if:

1. It describes an observable and measurable behavior of the learner — **what** the student is to do. For example:

a. write a paragraph describing three major causes of World War Two
b. find the solution set of a quadratic equation
c. mend an article of personal clothing
d. demonstrate the correct use of a power drill
e. correctly add a pair of three-digit numbers
f. correctly punctuate a written paragraph
g. correctly spell a list of words

2. It describes the conditions for evaluation — **how** the student is to perform the behavior. For example:
a. on a written test
b. by oral expression
c. given a metric ruler
d. using any of three accepted techniques
e. from information on a worksheet
f. on a graphing test
g. during a teacher-student conference

3. It describes the level of quality — **how well** the student must perform the behavior. For example:
a. with 90% accuracy
b. by scoring 26 out of 30
c. by meeting 4 of 7 previously determined criteria
d. 9 of 10 correct identifications
e. 90% within a 30-minute period of time
f. to the satisfaction of both the teacher and the learner
g. all of the items

In summary, to translate a general statement of **desired outcome** — referred to in SPECS as a **program objective** — into a statement that will facilitate the collection of **actual outcome** data, one or more achievement indicators must be written for each program objective. Students must satisfy some or all of these achievement indicators before achievement of the objective will be inferred. To satisfy the achievement indicator, a student must: perform an observable, measurable act, under certain evaluative conditions, and with a desired level of quality — all three dimensions being defined by the achievement indicator.

WRITING ACHIEVEMENT INDICATORS

Although being able to identify achievement indicators or being able to recognize their three components is a necessary task, being able to write them is far more important. The following pattern should help in formulating indicators.

"Given (2) , the learner will be able to (1) , with (3) ."

The numbers refer to the three parts of a legitimate achievement indicator that were discussed earlier: (2) describes the evaluative conditions; (1) describes the desired, observable, and measurable act of the learner; and (3) describes the level of quality of the desired behavior. Thus, the blanks can be filled in as follows:

"Given (a particular set of conditions), the learner will be able to (do something or exhibit some behavior) with (a particular degree of accuracy, effectiveness, or quality)."

By further spelling out that which is in parentheses, we can write a good achievement indicator. For instance:

"Given a list of ten statements, the reader of this document will be able to identify verbally those statements which are legitimate achievement indicators with 100% accuracy."

This particular format is certainly not the only one possible, but it may provide a basis for writing achievement indicators. Each person who becomes involved in writing achievement indicators will undoubtedly develop variations in the format.

SEQUENCING ACHIEVEMENT INDICATORS

After writing several related achievement indicators, one might ask, "Is there a desirable order in which learners should satisfy the particular indicators?" Consider, for example, the following program objective and its related achievement indicators.

Program Objective:
That students know how to spell

correctly the words in their reader.

Achievement Indicators:

1. Given a dictated list of 50 words from the reading text, the student will spell in writing 100% of the words correctly.
2. Given a written list of 50 words from the reading text, 10 of which are misspelled, the student will spell correctly eight of the 10 misspelled words.
3. Given a written list of 50 words from the reading text, 15 of which are misspelled, the student will be able to recognize the 15 misspelled words by checking them.

In order to decide in what order these three achievement indicators should occur, one must consider the complexity of learning and the behavior required of students when they attempt to satisfy these indicators. The first indicator requires that students spell words that are dictated; the third indicator requires that they recognize words that have been misspelled in writing; and the second indicator requires not only that they recognize the misspelled words, but also that they correctly spell them. It would seem desirable, therefore, to sequence these indicators from pure recognition (3) to both recognition and correction of some words (2) and finally to correct spelling of all words when dictated (1).

Another way to analyze ways of sequencing these three indicators is to ask the question: "If a student could satisfy the third indicator, could s/he also satisfy the other two as well?" If so, then it probably should follow the other two; if not, it should probably precede them. Being able to recognize misspelled words hardly guarantees an ability to spell words correctly; thus, the third indicator would probably precede the other two. By contrast, if a student could satisfy the first indicator, s/he should also be able to satisfy the second and third indicators; therefore, the first indicator would be the last in the sequence.

By sequencing indicators in this way, we can separate the desired terminal performances from those which represent only a means for getting to that end. In the above example, the terminal indicator or the skill which students are ultimately expected to master, is that they be able to spell correctly the words they read. Achievement indicator number one obviously speaks most clearly to that end, while the other indicators represent means to that end.

THE DECISION RULE

In writing an achievement indicator one is essentially defining a particular behavior that a student must exhibit, the conditions under which the student must exhibit the behavior, and the quality with which the student must perform the behavior before it will be inferred that the student has achieved a particular program objective. However, that inference can be based upon quite different kinds of student behavior.

Sometimes a student's achievement of a particular program objective can be determined by using a single achievement indicator. At other times, however, a teacher may require that the student "satisfies" two or more achievement indicators before s/he is prepared to infer that the student has achieved the program objective. In SPECS, this statement of how many or which achievement indicators the student must satisfy in order to achieve the objective is referred to as the **decision rule.**

For example, the following objective has two related achievement indicators.

Program Objective:
That students know the difference between a simple series circuit and a simple parallel circuit in electricity.

Achievement Indicators:

1. Given a written test, the student will write a paragraph and draw a diagram explaining how a cell and two lamps are wired, first in series, and then in parallel. The description must contain all five of the conditions stated in the text.
2. Given two cells, four lamps, wire, and instructions, the student will wire one cell and two lamps in series and the other cell and two lamps in parallel to the satisfaction of the instructor.

In this case, one might ask, "Should the student be required to satisfy only one of the indicators, or both?" In making this decision, one must consider the nature of the skills required of students when they attempt to satisfy these two indicators. The first indicator involves writing skills, recall skills, and narrative skills; the second indicator requires psychomotor skills; and both require understanding. But, is one a "better" indicator of achievement of the program objective? The answer to this question depends on what kind of learning the teacher has in mind for the student. If one wanted to test the student's "wiring skills," the second indicator would seem the more appropriate. On the other hand, if the test was on the student's ability to write a short scientific account of the two types of circuits, the first indicator would probably be more appropriate. And, if the teacher wanted to test the student's understanding by the written word and in practice, the teacher would probably ask the student to satisfy both indicators. Therefore, for a particular program objective, the choice of indicators which must be satisfied (the decision rule) will largely depend upon the kind of learning to which the objective is addressed.

THREE DOMAINS OF LEARNING

For the most part, the objectives and text used by Benjamin Bloom[6] and David Krathwohl[7] to illustrate the different domains

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[6]Benjamin Bloom, et al., **Taxonomy of Educational Objectives: Handbook I: Cognitive Domain.** New York: David McKay Company, 1956

and levels of learning are similar to what we hve described as program objectives. That is, most of the illustrative objectives presented are not directly measurable and so, to be useful in any evaluative process, they would first have to be translated into achievement indicators. Nevertheless, it is important that any teacher involved in the instructional process have an understanding of the kind and level of learning which her/his teaching emphasizes. A review of the taxonomies of Bloom and Krathwohl is an appropriate place to begin.

Bloom and Krathwohl identify three domains of learning: cognitive, psychomotor, and affective. These three domains are not mutually exclusive; the domains, however, do suggest three different emphases in human learning.

1) The **cognitive** domain has to do primarily with mental and intellectual processes including recall or recognition of knowledge, remembering, and solving intellectual tasks.

2) The **psychomotor** domain has to do primarily with muscular or motor skills, with manipulation of materials and objects, and with neuromuscular coordination.

3) The **affective** domain has to do primarily with attitudes, values, and feelings.

In brief, the cognitive domain is knowing, the psychomotor domain is doing or performing, and the affective domain is feeling or valuing.

By and large, public schools have tended to emphasize learnings related to the cognitive domain — that is, the development of students' minds through the presentation of facts and information to be stored for instant retrieval. In recent years, however, there has been increasing awareness of the need to maintain a balance among all three domains. Knowledge alone is insufficient for survival in the twentieth century; equally necessary are a range of skills to meet a variety of situations and a set of positive attitudes toward oneself and others. Therefore, it is important to consider incorporating some kind of balance among the cognitive, psychomotor, and affective domains of learning into one's set of program objectives.

Obtaining just any kind of balance is clearly not sufficient since the **level** of learning to which the objectives are addressed must also be assessed. For example, one must assess whether the objectives are addressed to simple recall of facts or whether they require students to use the facts for some other purpose.

To clarify these three levels of learning, Bloom has identified six levels of the cognitive domain; other authors have identified five levels of the psychomotor domain; and Krathwohl has identified five levels of the affective domain.

The Cognitive Domain

The six levels of the cognitive domain from the simplest to the most complex level are:

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Synthesis
6. Evaluation

1. Knowledge

The simplest level of the cognitive domain for the learner is knowledge and involves the ability of the learner to recall (remember) specifics as well as universals, methods and processes, structures and patterns.

Key terms used in writing program objectives include:
to know
to be familiar with
to identify
to recognize
to recall
to distinguish

2. Comprehension

Level two of the cognitive domain is comprehension — the ability of the learner to use materials and ideas without necessarily relating them to other materials or seeing their fullest implications.

Key terms used in writing program objectives include:
to translate
to explain
to distinguish
to transform
to interpret
to rearrange

3. Application

Level three of the cognitive domain is application — the ability of the learner to use learned information in particular situations. To be able to apply an appropriate abstraction to a new problem.

Key terms used in writing program objectives include:
to apply
to solve
to organize
to transfer
to relate
to use

4. Analysis

Level four of the cognitive domain is analysis — the ability of the learner to break down information into its component parts thereby making clear the relative hierarchy of ideas and relationships between the ideas.

Key terms used in writing program objectives include:
to analyze
to classify
to interrelate
to comprehend
to distinguish
to infer

5. Synthesis

Level five of the cognitive domain is synthesis — the ability of the learner to put together elements or parts to form a new whole.

Key terms used in writing program objectives include:
to create
to formulate
to develop
to plan
to compose
to design

6. Evaluation

The most complex level of the

[7] David R. Krathwohl, et al., **Taxonomy of Educational Objectives: Handbook II: Affective Domain.** New York: David McKay Company, 1964

cognitive domain is evaluation — the ability of the learner to make quantitative and qualitative judgments about the extent to which materials, information, methods, or ideas satisfy a given set of criteria. It involves all the five prior levels.

Key terms used in writing program objectives include:
to judge
to evaluate
to appraise
to consider
to conclude
to formulate

The Psychomotor Domain

The psychomotor domain has to do with skills, muscular or motor, and with manipulation of materials and objects. A list of the levels of the psychomotor domain has been developed by the Program Development Center of Northern California. In the text, "A Programmed Course for the Writing of Performance Objectives,"[8] prepared by the Center and distributed by Phi Delta Kappa, the following list of levels is offered:

1. Imitation: of some observed act usually lacking neuromuscular coordination.
2. Manipulation: emphasizes skill in following directions.
3. Precision: emphasizes accuracy, exactness, and control with reduction of errors.
4. Articulation: emphasizes coordination of a series of acts.
5. Naturalization: the act is routine — automatic and spontaneous responses — performance is natural and smooth.

The Affective Domain

The third domain of learning — the affective domain — includes those "objectives which describe changes in interest, attitudes, and values and the development of appreciation and adequate adjustment."[9] It includes objectives which emphasize a feeling tone, an emotion, or a degree of acceptance or rejection."[10]

Krathwohl and his colleagues[11] identify five levels of the affective domain:

1. Receiving
2. Responding
3. Valuing
4. Organization
5. Characterization

1. Receiving

The simplest level of the affective domain for the learner is receiving and involves the willingness of the learner to engage in a particular behavior or activity, the acquiescence of the learner with a particular request, and the learner's satisfaction when engaging in a particular behavior or activity.

Key terms used in writing program objectives include:
to enjoy
to seek information
to derive satisfaction
to listen to
to accept
to engage in

2. Responding

Level two of the affective domain for the learner is responding and involves willingness of the learner to receive or tolerate a given situation rather than to avoid it and selection by the learner of a particular stimulus for attention.

Key terms used in writing program objectives include:
to attempt
to acclaim
to volunteer
to select
to try to
to help

3. Valuing

Level three of the affective domain for the learner is valuing and involves the learner's acceptance of a particular value as his own, or his preference for a particular value, or his commitment to a particular value.

Key terms used in writing program objectives include:
to choose
to accept
to appreciate
to desire
to support
to prefer

4. Organization

Level four of the affective domain for the learner is organization and involves the conceptualization by the learner of his totality of values into an ordered value system. It includes an understanding by the learner of how a value is related to those he already holds or to new ones that he is coming to hold.

Key terms used in writing program objectives include:
to define
to relate
to choose
to defend
to judge
to formulate

5. Characterization

The most complex level of the affective domain is characterization and involves the development by the learner of a value orientation which enables him to reduce and order the complex world around him and to act consistently and effectively.

Key terms used in writing program objectives include:
to discriminate
to verify
to differentiate
to adjust to
to develop
to revise

We have examined the three domains of learning, cognitive, psychomotor, and affective, and the various levels of learning associated with each; and we have seen that achievement indicators can be written at each level of each domain. This is not to say that one must write achievement

[8] Program Development Center of Northern California. **A Programmed Course for the Writing of Performance Objectives.** Bloomington, Indiana: Phi Delta Kappa, Inc., 1972, pp. 32-33.

[9] Bloom, **op.cit.**, p. 7

[10] Krathwohl, **op.cit.**, p. 7.

[11] Krathwohl, **op.cit.**, p. 34, 35

indicators at each level, but rather that a knowledge of the various levels gives a better way of maintaining balance among the various activities asked of students.

Instructional Materials

The SPECS instructional materials are a series of documents that have been designed to facilitate instructional planning and evaluation. These materials include:

Three Self-Contained Booklets:
1) The **Record of Instructional Program Objectives**
2) Two forms of a booklet for **Weekly Lesson Plans**, one for recording plans for a single program, the other for recording plans for up to three programs.
3) The **Record of Student Performance**

Two Summary Documents:
1) A four-page **Instructional Program Summary Plan**
2) A six-page **Instructional Program Summary Report**

Although the use of these materials as they are intended ensures that careful planning will ensue, that data will be accumulated, and that a data base will be built for evaluation and replanning, it is not the intent of SPECS to mandate standardized forms for classroom teachers. Rather, the principal objective is to encourage teachers to think carefully about the instructional programs for which they are responsible, plan them in detail, monitor their desired and actual outcomes, processes, and costs, and be able to share explicit information about the programs with others. How that information is recorded can best be determined by the professional educators involved in the planning and evaluating process. Therefore, the use of the SPECS instructional materials should be viewed as an alternative approach rather than as the only means of documenting instructional program plans and results.

In this section, the instructional materials will be discussed in detail. In addition, several alternative types of report cards which teachers have developed to supplement these documents will also be presented.

RECORD OF INSTRUCTIONAL PROGRAM OBJECTIVES

This self-contained booklet is designed for recording instructional program objectives in terms of desired student learning outcomes — that is, strictly in terms of the specific cognitive, affective, and psychomotor changes that the program is designed to bring about in student performance.

It is important to remember, however, that the objectives listed in the **Record** are either explicitly or implicitly part of a larger structure or hierarchy of instructional objectives that range from general to specific. That is, for any instructional program, objectives can be written at different levels, ranging from those that are extremely general which simply identify broad topics or major "chunks" of a program to those that are very specific which identify highly individualized, discrete skills or knowledge.

To assist a teacher or team of teachers in planning for an instructional area, it is often useful to outline in a flowchart or in a modified decision tree the large chunks of content within the area. For example, a graphic representation of a Science curriculum might look as below.

Record of Instructional Program Objectives - Comments

1 Program Element
Refers to unit, subject, or large "chunk" of content.

2 Cognitive
Defines the domain(s) of learning to which the objective applies.

3 AI-1
Achievement indicator. Space is provided for writing one, two or three achievement indicators for each program objective.

4 Decision Rule
Statement indicating how many or which achievement indicators the student must satisfy in order to achieve the objective.

5 "will not be formally measured" (see pg. 28)
Although some or all of the objectives included here may be measurable, the instructor has chosen not to measure these objectives during this teaching cycle.

INSTRUCTOR CLARK'S EARTH SCIENCE FLOWCHART

BROAD GOALS	PROGRAM ELEMENT	TOPICS	PROGRAM OBJECTIVES	ACHIEVEMENT INDICATORS
General Science Goals			O_1 (M)*, O_2 (N)**, O_3 (N)	AI-1
Content Goals	Geology	Rocks and Minerals	O_1 (M)	AI-1, AI-2
			O_2 (M)	AI-1
			O_3 (M)	AI-2
		Topography/ Land Forms	O_4 (M)	AI-1, AI-2
		Geologic History	O_5 (N), O_6 (M)	AI-1, AI-2, AI-3
	Oceanography	Research	O_1 (N), O_2 (M)	AI-1
		Characteristics of Sea Water	O_3 (M), O_4 (N)	AI-1
		Characteristics of Ocean Basins	O_5 (M)	AI-1
			O_6 (M)	AI-1
		Sea Life	O_7 (M)	AI-1
	Meteorology	Composition and Structure of the Atmosphere	O_1 (M), O_2 (N), O_3 (N)	AI-1
		Energy Interactions	O_4 (M)	AI-1, AI-2, AI-3
		Weather	O_5 (N)	
	Astronomy	Stars/ Galaxies	O_1 (M), O_2 (N)	AI-1
		Solar System	O_3 (M)	AI-1, AI-2

*(M) - Measurable
**(N) - Non-measurable

1 Program Element: General Science

O- 1 To develop an awareness of the social implication of scientific advancements. 2 (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
3 AI-1	Write a statement expressing your opinion & reasoning of 1 critical issue.	Given three Critical Issues in Science articles.	Standard report used. Teacher evaluation of analysis of issue.
AI-2			
AI-3			

4 Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and/or AI-2 and/or AI-3~~

Program Element: Geology

O- : 1 To understand the general composition and structure of the earth from crust to core. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Correctly label the layers and their boundaries.	Given a cross-sectional diagram of the earth from crust to core.	All labels correct.
AI-2	Describe the compositional make up of each earth layer.	Given a blank sheet of paper.	Teacher and student evaluation.
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 and/~~or~~ AI-2 ~~and/or AI-3~~

Program Element: Geology

O- : 2 To be able to identify various rock-forming minerals and ores. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Identify one mineral or ore in each rock.	Given five rocks.	4 out of 5 correct.
AI-2			
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and/or AI-2 and/or AI-3~~

Program Element: Geology

O- : 3 To understand the rock cycle and how rocks are classified. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Correct placement of terms in appropriate blanks.	Given a diagram of the rock cycle with blank spaces and a list of terms.	15 answers correct.
AI-2	Match rock with correct class.	Given a list of 30 rocks and three basic classifications.	20 of 30 correct.
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and~~/or AI-2 ~~and/or AI-3~~.

Program Element: Geology

O- : 4 To understand the causes and/or effects of basic weathering and erosion processes. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	List one cause and effect of basic weathering or erosion for each picture.	Given a set of 10 pictures.	8 of 10 correct.
AI-2	List a cause and effect of erosion.	Given a set of five student located pictures.	All correct.
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 and/~~or~~ AI-2 ~~and/or AI-3~~.

Program Element: Geology

O- : 6 To understand (1) Why and how the geologic history of the earth is recorded; and (2) how this record can be decoded. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	List 3 methods in which preservation of past life has occurred.	Given a blank sheet of paper.	All correct.
AI-2	Describe the use of each method; indicate accuracy of each method.	Given a list of two dating methods.	All correct.
AI-3	Match guide fossil picture with geologic period.	Given a set of 10 guide fossil pictures and a list of geologic periods.	8 of 10 correct

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 and/~~or~~ AI-2 and/~~or~~ AI-3.

Program Element: Oceanography

O- : 2 To understand the methods used in oceanographic research. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	List appropriate methods for studying the problem.	Given an oceanographic research problem.	Teacher and student evaluation.
AI-2			
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and/or AI-2 and/or AI-3.~~

Program Element: Oceanography

O- : 3 To determine by experimentation the chemical characteristics of sea water in comparison to fresh water. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Test sea water and fresh water for presence of calcium, sulfates, chlorides, ammonia, and organic matter.	Given appropriate lab equipment and materials.	All samples match with the instructor's experiment.
AI-2			
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and/or AI-2 and/or AI-3.~~

Program Element: Oceanography

O- : 5 To recognize basic topographical features of the ocean basins. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	List and describe three basics of topography of ocean basins.	Given blank paper and pencil.	2 of 3 correct.
AI-2			
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and/or AI-2 and/or AI-3.~~

Program Element: Oceanography

O- : 6 To know the basic sedimentation and erosion processes that occur in or near the oceans and specific features produced by these processes. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Orally identify processes involved in sedimentation and erosion.	Given 3 sedimentation and erosion models.	All correct.
AI-2			
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and/or AI-2 and/or AI-3.~~

Program Element: Oceanography

O- : 7 To know the basic life zones and types of life prevalent in the oceans. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Identify basic life zones and types of life prevalent in the ocean.	Given a list of 100 words.	All correct.
AI-2			
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and/or AI-2 and/or AI-3.~~

Program Element: Meteorology

O- : 1 To know that the atmosphere is composed of a mixture of various gases. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Chart composition of dry air.	Given blank sheet of paper.	All amounts and gases correct.
AI-2			
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and/or AI-2 and/or AI-3.~~

Program Element: Meteorology

O- : 4 To understand that the matter of which the atmosphere is composed and the earth as well, are in continuous interaction with the sun's radiant energies. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Check the causes of heating the earth.	Given a list of 10 causes.	All 10 correct.
AI-2	List four types of heat transfer in the atmosphere. Explain how they differ.	Given blank sheet of paper.	Teacher evaluation.
AI-3	Diagram convection pattern on an island during late pm on a clear, sunny day.	Given blank sheet of paper.	Correct match with text chart.

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 and/~~or~~ AI-2 ~~and~~/or AI-3.

Program Element: Astronomy

O- : 1 To understand the structure and formational theories of stellar phenomena and our universe. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Write a paragraph describing the structure and formational theories of stellar phenomena.	Given a blank sheet of paper.	Standard report format. Teacher evaluation of inclusion of theories.
AI-2			
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and/or AI-2 and/or AI-3~~.

Program Element: Astronomy

O- : 3 To understand the basic structure and function of our solar system. (Cognitive)

	Observable Act	Conditions or Givens	Level of Quality
AI-1	Draw a model diagram of solar system in detail. Label each solar body.	Given a blank sheet of paper.	All labeling correct.
AI-2	Describe the body with respect to position from the Sun and position relative to other bodies.	Given a list of solar bodies.	Teacher evaluation.
AI-3			

Decision Rule: To demonstrate achievement of this objective, a student must satisfy AI-1 ~~and~~/or AI-2 ~~and/or AI-3~~.

SECTION TWO: For specifying those objectives of the program that will not be formally measured in terms of specific achievement indicators.

Record below those objectives (O's) of the program for which achievement indicators will not be generated. These may include objectives in the cognitive, affective, and/or psychomotor domains. If applicable, indicate the program element relevant to each objective, and number the objectives in sequence with any others that have been recorded in Section One. Space has been provided in this section of the booklet for recording up to twenty-five program objectives.

Program Element: General Science
O- : 2 To develop an awareness of occupational opportunities available in the Earth Sciences. (Affective)

Program Element: General Science
O- : 3 To develop good study habits and responsible classroom behavior. (Affective)

Program Element: Geology
O- : 5 To develop an appreciation of the age and history of our earth. (Affective)

Program Element: Oceanography
O- : 1 To understand the historical development of the science of oceanography. (Cognitive)

Program Element: Oceanography
O- : 4 To understand the layering of ocean waters according to density. (Cognitive)

Program Element: Meteorology
O- : 2 To understand the constituents of the atmosphere are a vital part of all life on earth. (Cognitive)

Program Element: Meteorology
O- : 3 To understand that the atmosphere may be arbitrarily divided into layers with specific characteristics and functions. (Cognitive)

Program Element: Meteorology

O- : 5 To develop an appreciation for the role of weather in day to day life. (Affective)

Program Element: Astronomy

O- : 2 To develop an awareness and appreciation of the vastness of our universe. (Affective)

Program Element:

O- :

Program Element:

O- :

Program Element:

O- :

Program Element:

O- :

Program Element:

O- :

Program Element:

O- :

Program Element:

O- :

SECTION THREE: For specifying changes in program objectives that either have been made during the program or should be made prior to another cycle.

Use the space below to record notes relevant to modifying any or all of the program's objectives, including both actual modifications made during the program's implementation and recommended modifications for planning another cycle of implementation.

Program objectives seem to be satisfactory; however, achievement indicators for astronomy might need to be clarified.

INSTRUCTIONAL PROGRAM SUMMARY PLAN

The four-page **Instructional Program Summary Plan** asks those who are responsible for an instructional program to summarize **prior** to implementation:

1) The program's overall purposes and characteristics;
2) Its most critical, terminal objectives for students;
3) Its planned procedures, both for the instruction of students and assessment of their learning; and
4) The resources that will be required to implement those procedures.

Once developed, a **Summary Plan** not only provides evidence of planning for decision-making, but also effectively communicates the planner's intentions to other interested persons in several ways:

1) It can be used by teachers and administrators for explaining the expected content and benefits of an instructional program to students, parents, board members, and other teachers and administrators.
2) It can be used by teachers, department chairpersons, administrators, and other instructional supervisors to review and refine the content of a program prior to its implementation.
3) It can be used by teachers as a basis for subsequently developing more detailed plans for each element or unit comprising the program.
4) If the processes of budget preparation and program planning are synchronized, it can be used as a basis for planning a school or district budget.

Instructional Program Summary Plan - Comments

6 **Code** (see pg. 32)
This code number was assigned to Instructor Clark's Earth Science courses in Lincoln Junior High School when Emerald School District implemented Components One and Two of SPECS and developed a program budgeting and cost-accounting system.

7 **Program Personnel** (see pg. 32)
The names and roles of instructors involved in planning and teaching the course, and their aides should be included here.

8 **Critical Terminal Objectives of the Program** (see pg. 33)
These are the terminal or exit objectives of the program, rather than those which tend to be more developmental. Taken together, they present a summarized and comprehensive description of the program.

9 **O-1 - General Science Goal** (see pg. 33)
This code identifies the program objective as well as the unit of the program. Although eight spaces are provided for writing Critical Terminal Program Objectives, this number is arbitrary and an instructor may choose to identify more or fewer objectives.

10 **$4,000** (see pg. 35)
The amount of detail to be included here depends primarily on the district's desire and ability to develop a program budgeting and cost-accounting system. If it is desirable to know the dollar costs associated with individual programs, teachers, administrators and the district's business manager may work together to generate this data.

Instructional Program Summary Plan

Instructional Program Title and Code (6) Earth Science 112-8-0804

Program Location Lincoln Junior High School Program Dates 9/10 - 6/11, 19___.

Approximate Number of Students Who Will Be Involved 78

Brief Program Description. In one or two paragraphs, describe the expected program—its overall intentions, the major topics that will be covered, and its relation to other programs. Earth Science is a general survey course designed to give the student an overall understanding of the planet Earth. The major topics are: Geology--Rocks and Minerals, Topography and Land Forms, and Geologic History; Oceanography--Research, Seawater, Ocean Basins, Waves, Tides and Currents, and Sea Life; Meteorology--Composition and Structure of the Atmosphere, Energy Interactions, Weather, Hydrologic Cycle and Climate; and Astronomy--Stars and Galaxies, Solar System and Space Exploration. Lab procedures and skills are stressed in each unit. This is the third course in the Life, Physical and Earth Science sequence.

Expected Program Characteristics. Indicate how the program will be implemented, either by checking one of the descriptions below or by writing in a more appropriate description.

1. **Instructional Requirements:**

   X Students involved in the program will move through it as a total group.

   ___ Students will move through the program at their own individual rates.

   Other:

2. **Time Requirements:**

   X The program will have definite beginning and ending dates and will require approximately ___ weeks to complete.

   ___ The beginning and ending dates of the program will vary from student to student.

   Other:

3. **Achievement Requirements:**

   X During the program, all students will work on all of its objectives; given time constraints, however, some of the students will probably not achieve all of the program's objectives.

   ___ During the program, all students will work on each objective until they achieve it; given time constraints, however, some of the students will probably not have a chance to work on all of the program's objectives.

   Other:

(7) **Program Personnel.** Carmen Clark - Teacher

8 Critical Terminal Objectives of the Program. List below up to eight of the program's critical terminal objectives. Include those objectives that will be formally measured in terms of specific achievement indicators as well as those that will not be systematically assessed. These may include objectives in the cognitive, affective, and psychomotor domains. Cross-reference them by code numbers to the objectives listed in the *Record of Instructional Program Objectives.*

9 O-1 : General Science Goal

To develop an awareness of the social implications of scientific advancements.

O-1 : Geology--Rocks and Minerals

To understand the general composition and structure of the Earth.

O-3 : Oceanography.

To determine by experimentation the chemical characteristics of sea water in comparison to fresh water.

O-4 : Meteorology

To understand that the matter of which the atmosphere is composed, and the earth as well, are in continuous interaction with the Sun's radiant energies.

O-3 : Astronomy

To understand the basic structure and function of our solar system.

O- :

O- :

O- :

Summary of Planned Assessment Procedures. For those critical terminal objectives that will be measured, describe the specific assessment techniques that will be used before, during, and/or after instruction. Abstract this information from the program's weekly lesson plans.	**Summary of Planned Instructional Procedures.** For each objective, describe briefly what students and teachers will do to help students achieve it. Abstract this information from the program's weekly lesson plans.
Teacher evaluation of student opinions and reasoning based on "Critical Issues in Science" articles.	In class reading of articles. Group discussion of issues.
Before--pretest both achievement indicators. During--worksheets, oral and written quizzes. After--post-test both indicators.	Television presentation "Earth & Its Structure." Discussions of Earth composition chart. Textbook reading.
Before--none. During--Teacher observation of lab skills. After--teacher evaluation of written lab report.	Lab activity--pre- and post-lab discussions. Field trip.
Before--pretest on all achievement indicators. During--discussion of television lectures. After--post-test on all achievement indicators.	Textbook and supplemental reading. Guest speaker from State Department of Meteorology.
Before--pretest both achievement indicators. During--quizzes, worksheets, laboratory activities, discussions. After--post-test both achievement indicators.	Field trip and Planetarium. Supplemental reading. Television presentation "Knowing and Understanding the Solar System."

Required Program Resources. List the personnel, materials, equipment, facilities, etc. that will be required to carry out the program's planned assessment and instructional procedures. (Actual dollar cost estimates may have to be provided by staff in the district's business office.)

Personnel (Who and for approximately how much time?) ..... (10) $4,000

Carmen Clark -- two class sessions per day--36 weeks.

$12,000 salary - approximately 1/3 of teaching time.

Materials and Supplies 50

Basic Lab (meets State Department of Education standards) materials and supplies.

(Basic Lab a part of the classroom-consumable materials and supplies $50)

Equipment 0

Television - (borrowed from AV Center)

Other Required Resources 100

Bus for field trips. (2 trips at $50 per trip)

Supervision assistance for field trips. (will use parents - $0)

TOTAL BUDGET REQUIRED $4,150

These materials were developed by staff of the SPECS Program within CASEA, the research and development unit of the Center for Educational Policy and Management (CEPM) at the University of Oregon. CEPM is supported in part by funds from the National Institute of Education (NIE). Opinions expressed in the materials, however, do not necessarily reflect policies or positions of either CEPM or NIE, and so no official endorsement by either organization should be inferred.

WEEKLY LESSON PLANS

There are two SPECS **Weekly Lesson Plan** booklets, one for recording daily plans for a single instructional program, the other for recording plans for up to three instructional programs. Although both booklets follow a traditional lesson plan format and focus on planned processes for the classroom, the booklets have three important features.

The **Weekly Lesson Plans** ask teachers to describe not only their planned instructional procedures — how information will be presented to students, how students will be grouped, and what students and teachers will do during each class session — but also their specific plans for assessing student performance and the particular resources that will be required in order to carry out those procedures.

Second, they ask teachers to systematically key their planned instructional and assessment procedures to specific program objectives. In the booklet for one program (pages 38-39), the program objectives are listed in both daily and weekly planning, while in the booklet for up to three programs (pages 40-41), objectives are recorded only for daily planning.

In addition, both booklets encourage teachers to conduct a brief evaluation of their instructional and assessment procedures at the end of each week, noting those processes that proved to be particularly effective or relatively ineffective and offering specific recommendations for either immediate or long-term program revisions.

Given these three special features, the **Weekly Lesson Plans** are designed to replace, rather than augment, whatever forms are currently being used in a school district to document weekly or daily lesson plans.

Lesson Plans - One Program - Comments

⓫ **Focal Objectives**
The objective/s instructor Clark plans to focus on during this particular day.

⓬ **Required Resources**
An instructional aide could know, from looking at this column, the materials and equipment which will be needed on this day and have them available for the instructor.

Week	
Fr:	9/22
To:	9/26

Focal Program Elements and Objectives. In the box to the right, indicate the particular program elements (if applicable) and the program objectives that will be addressed during the week. Cross reference the objectives by code number to those listed in the *Record of Instructional Program Objectives.*

	(11) Focal objectives and Planned instructional and assessment procedures:	(12) Required resources:
MONDAY Date: 9/22 Period: 1 Room: 204	Focal objectives 0-1 General Science Planned instructional and assessment procedures: Show the film "Thinking Scientifically" (15 min.) Follow film with discussion questions presented in the film. (20 min.) Distribute copies of "Critical Issues in Science." Three copies per student. (2 min.) Provide time for student to read the copies. (10 min.)	Required resources: Film, Projector, Screen 60 copies of "Critical Issues in Science"
TUESDAY Date: 9/23 Period: 1 Room: 204	Focal objectives 0-1 General Science, 0-1 Geology Planned instructional and assessment procedures: Briefly discuss "Critical Issues in Science" articles (10 min.) Collect articles. Students write paragraph analyzing one critical issue. (15 min.) Pretest--label the layers of earth on cross-sectional diagram. (10 min.) Read Chapter 3 Space and Earth. (10 min.)	Required resources: Articles Cross-sectional diagrams (20) Student textbooks
WEDNESDAY Date: 9/24 Period: 1 Room: 204	Focal objectives 0-2 Geology Planned instructional and assessment procedures: Guest speakers, Allan Dark and Sarah Middleton. Topic: How to Identify Locally Found Rocks. (30 min.) Discussion and observation of rocks brought by guest speakers. (10 min.) Prestest--rock classification. (5 min.)	Required resources: Guest will bring all resources. 20 copies

Program Elements/Objectives: General Science, Geology

Refer to Record of Instructional Program Objectives

THURSDAY Date: 9/25 Period: 1 Room: 204

Focal objectives 0-2 Geology, 0-3 Geology
Planned instructional and assessment procedures:

Read "Rocks & Minerals," p. 52-58 in Knowing Your Earth. (15 min.)

Divide class into groups of four. Distribute 5 rocks from classroom collection to each group. Ask groups to choose leader to report on observation about each rock. (30 min.)

Required resources:

20 copies of Knowing Your Earth

20 rocks (stored in left bottom drawer--labeled Rocks)

FRIDAY Date: 9/26 Period: 1 Room: 204

Focal objectives 0-1 Geology, 0-2 Geology
Planned instructional and assessment procedures:

Post-test--by giving cross-sectional diagram of earth and asking students to label layers. (15 min.)

Post-test--rock classification. (10 min.)

Planning for field trip. (20 min.)

Required resources:

Cross-sectional diagram (20)

20 copies

Information regarding cost, time, etc.

Weekly Program Evaluation. Indicate below which instructional and assessment procedures proved to be particularly effective, which did not, and why. Indicate also any recommended changes in the program's objectives, indicators, and procedures. As appropriate, record any revised program objectives and indicators in the *Record of Instructional Program Objectives.*

Particularly effective procedures

Guest speakers.

Critical Issues assignments.

Relatively ineffective procedures

Recommended Changes

Week	
Fr:	9/22
To:	9/26

For each day of each program, indicate the particular program objectives (O's) that will be addressed during the class, the planned instructional and assessment procedures, and the required resources. Cross reference the objectives by code number to those listed in the *Record of Instructional Program Objectives.*

	MONDAY Date: 9/22	TUESDAY Date: 9/23	WEDNESDAY Date: 9/24
PROGRAM Earth Science	Period: 1, 3 O: 1 General Science Planned procedures and resources Film "Thinking Scientifically" (15 min.) Follow film with discussion questions. (20 min.) Distribute copies of "Critical Issues in Science" 3 copies per student. (2 min.) Time for students to read copies. (10 min.) (Film, projector, screen, 60 copies of "Critical Issues in Science.")	Period: 1,3 O: 1 Gen. Sci. 0-1 Geology Planned procedures and resources Discuss "Critical Issues in Science." (10 min.) Collect articles. Write paragraph analyzing 1 critical issue. (15 min.) Pretest--label the layer of earth cross-sectional diagram. (10 min.) Read Ch. 3 Space & Earth. (10 min.) (Articles, cross-sectional diagram 20, student textbooks.)	Period: 1, 3 O: 2 Geology Planned procedures and resources Two guest speakers. (30 min.) Discussion and observation of rocks brought by guest speakers. (10 min.) Pretest--rock classification (5 min.) (Guest will bring all resources, 20 copies of pretest)
PROGRAM Basic Chemistry	Period: 2,5,7 O: 3 Chemical Changes Planned procedures and resources Reading in Chapter 5. Discussion of Friday's Lab.	Period: 2,5,7 O: 3 Chemical Changes Planned procedures and resources Lab - Decomposition of wood. Paired groupings. Work on lab reports. Due on Friday. (lab facilities and materials)	Period: 2,5,7 O: 3 Chemical Changes Planned procedures and resources Review Decomposition Lab. Begin "Single and Double Replacement" Lab. Use some student groupings (lab facilities and materials)
PROGRAM	Period: O: Planned procedures and resources	Period: O: Planned procedures and resources	Period: O: Planned procedures and resources

At the end of the week, evaluate each program, indicating which instructional and assessment procedures proved to be particularly effective, which did not, and why. Indicate also any recommended changes in the program's objectives, indicators, and procedures. As appropriate, record any revised program objectives and indicators in the *Record of Instructional Program Objectives.*

THURSDAY Date: 9/25	FRIDAY Date: 9/26	Weekly Program Evaluation
Period: 1,3 **O:** 2,3 Geology & Rock Classification **Planned procedures and resources** Read "Rock & Minerals," p.52-58 in Knowing Your Earth. (15 min.) Divide class into groups of 4. Distribute 5 rocks to each group. Choose leaders to report observations of each rock. (30 min.) (20 copies of Knowing Your Earth, 20 rocks (stored in left bottom drawer).)	**Period:** 1, 3 **O:** 1,2 Geology & Rock Classification **Planned procedures and resources** Post-test--cross-sections of earth (15 min.) Post-test--rock classifications. (10 min.) Plan for field trip. (20 min.) (20 cross-sectional diagrams, 20 rock classification post-tests, information regarding cost, time, etc.)	**Particularly effective procedures:** Guest speakers Critical Issues **Relatively ineffective procedures:** Text reading **Recommended changes:** Need supplemental reading--text is too general.
Period: 2,5,7 **O:** 3 Chemical Changes **Planned procedures and resources** Continue "Single and Double" Replacement: Lab. Work on report due Wednesday. (lab facilities & materials)	**Period:** 2,5,7 **O:** 3 Chemical Changes **Planned procedures and resources** Film: Acids and Bases Worksheet accompanying film. Discussion regarding film. Collect lab reports for "Decomposition of Wood." (16 mm projector)	**Particularly effective procedures:** Group discussions **Relatively ineffective procedures:** Worksheets--needed to be more specific. **Recommended changes:** Rewrite worksheets.
Period: **O:** **Planned procedures and resources**	**Period:** **O:** **Planned procedures and resources**	**Particularly effective procedures:** **Relatively ineffective procedures:** **Recommended changes:**

RECORD OF STUDENT PERFORMANCE

Although this booklet may be similar to a traditional grade book, this self-contained booklet has three sections for recording information about the performance of up to 36 students.

Section One

The most important section of the booklet, is used for recording measures of student performance and effort on each of the measurable program objectives. These performance data may include pre and post-measures, quiz scores, homework evaluations, worksheet and exercise scores, and teacher judgments.

Section Two

Contains pages for recording, on a daily basis if desired, relevant supplementary information regarding each student's performance in the program.

Section Three

Contains pages for summarizing each student's performance at the end of each marking period and at the end of the total program.

Just as the SPECS **Weekly Lesson Plans** are designed to replace comparable documents, the **Record of Student Performance** is also designed to replace rather than augment grade books currently used in the district.

Record of Student Performance - Comments

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13 **PRE (15)**
Pre-test. Fifteen correct answers are required to satisfy the achievement indicator.

14 **WS**
Instructor has developed his/her own set of abbreviations to use on this form. "WS" refers to "worksheet."

15 **POST (15)**
Post-test. Fifteen correct answers are required to satisfy the achievement indicator.

16 **SAT**
Satisfied achievement indicator (Abbreviations used in this column are listed under "Suggested Abbreviations.")

17 **LAB**
Although only two achievement indicators were written for this objective, space has been provided for recording data for up to three. In this case, the instructor has used the extra columns for recording the results of the students' lab work.

18 **ACH of OBJ**
Achievement of objective (Abbreviations used in this column are listed under "Suggested Abbreviations.")

19 **EFF to ACH**
Effort to achieve (Abbreviations used in this column are listed under "Suggested Abbreviations.")

20 **Suggested Abbreviations**
Although this set of abbreviations has been suggested, an instructor may choose to develop his/her own set.

21 **As of** ___ / _____
Date when classroom work on this objective was completed.

22 This section is generally used for recording information which is not directly related to a particular program objective. Data recorded in this section may include scores on homework assignments, quizzes, classroom exercises or special products. Instructor Clark has also utilized this section for recording student attendance.

23 **Total** (see pg. 45)
Instructor Clark has noted that 15 objectives were measured during the program.

24 **At End of Program** (see pg. 45)
A similar form is included in the **Record of Student Performance** for recording data at the "End of Marking Period."

PROGRAM: Earth Science

OBJECTIVE: *0-3 Geology

DECISION RULE RE ACHIEVEMENT: AI - 1 or AI - 2

	AI - 1						AI - 2							18	19
	13 PRE (15)	WS	14 WS	15 QUIZ (30)	POST (15)	SAT	PRE ( )			16 POST (20)	SAT		17 LAB	ACH OF OBJ	EFF TO ACH
1	12	✓	✓	15						23	SA		35	AA	CE
2	9	✓	✓	9						22	SA		24	AA	SE
3	7	✓	–	6						20	SA		30	AA	SE
4	8	✓	✓	17	19	SA							32	AA	CE
5	10	✓	✓	15	20	SA							32	AA	CE
6	9	✓	✓	12						25	SA		–	AA	SE
7	2	✓	✓	8	15	SA							17	AA	SE
8	5	✓	–	7	12	NS							19	NA	LE
9	6	✓	✓	11	16	SA							27	AA	CE
10	5	✓	–	19						24	SA		38	AA	CE
11	4	✓	–	10	14	NS							25	NA	SE
12	4	✓	✓	11						20	SA		35	AA	CE
13	15	✓	✓	19		SB							38	AB	CE
14	5	✓	✓	16	18	SA							38	AA	CE
15	8	✓	✓	10	17	SA							30	AA	CE
16	7	✓	✓	13						25	SA		27	AA	SE
17	7	✓	✓	15	16	SA							31	AA	CE
18	6	✓	✓	12						25	SA		25	AA	SE
19	2	✓	✓	14						22	SA		31	AA	CE
20	0	✓	–	5						20	SA		17	AA	SE
21	3	✓	✓	–	11	NS							19	NA	LE
22	5	✓	✓	18	20	SA							38	AA	CE
23	4	✓	✓	16	18	SA							24	AA	SE
24	4	✓	✓	–						19	NS		–	NA	LE
25															

Teacher chose not to record

26 20 Suggested Abbreviations

Referring to Achievement Indicators:

SB--satisfied the achievement indicator before instruction
SA--satisfied it after instruction
NS--did not satisfy it

Referring to Objectives:

AB--achieved the objective before instruction
AA--achieved it after instruction
NA--did not achieve it

Referring to Students' Efforts:

CE--demonstrated considerable effort
SE--demonstrated some effort
LE--demonstrated little effort

21 As of 9 26

Number of students who worked on the objective and demonstrated achievement before instruction (AB) 1
Number of students who worked on the objective and demonstrated achievement after instruction (AA) 19
Number of students who worked on the objective and have not yet demonstrated achievement (NA) 4
Number of students who have not yet had an opportunity to work on the objective 0

TOTAL: 24

22

	WEEK 1						WEEK 2						WEEK 3						WEEK 4					
			Rock-Mineral Worksheet				Ch. 2 Questions						Questions Ch. 4		Film Worksheet 10							Open book Review Worksheet 20		
1			✓				✓			ab			✓		10							15		
2			✓				✓						✓		7							16		
3			✓				✓						✓		7							18		
4			✓				✓						✓		8							20		
5			✓				0						✓		ab							15		
6			✓				✓						✓		10							19		
7			✓				✓						✓		10							13		
8			✓				✓						0		6							17		
9			ab		ab		✓						✓		10							15		
10			✓				✓						✓		9		ab					10		
11			✓				✓						✓		10					ab		13		
12		ab	✓				✓						✓		8							15		
13			✓				✓						✓		7							16		
14			✓				0						✓		8							19		
15			✓				✓						✓		8							18		
16			✓				✓			ab			✓		8							19		
17			✓				✓						✓		7							17		
18			✓				✓						✓		6			ab				14		
19			✓				✓						✓		10							12		
20	ab		✓				✓						✓		9							15		
21			✓				✓						0		9							18		
22			✓				✓						✓		8							17		
23			✓				✓						✓		5							15		
24			✓				✓			ab	ab	ab	ab		2							12		
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24

PROGRAM: Earth Science

23 Total = 15 measurable objectives

PERFORMANCE SUMMARY AT END OF PROGRAM

	Number of Objectives Achieved		Number of Objectives Worked On But Not Achieved (NA)	Number of Objectives Not Worked On	Degree of Effort Demonstrated When Working on Program Objectives (Number of Objectives)			FINAL PROGRAM GRADE
	Before Instruction (AB)	After Instruction (AA)			(CE)	(SE)	(LE)	
1	4	11			✓			A
2		15				✓		A
3		11	4			✓		C-
4		14		1	✓			A-
5	2	13			✓			A
6		12	2	1		✓		C+
7	1	14			✓			A
8	1	11	3			✓		C
9	4	11			✓			A
10		13	1	1		✓		B
11		9	4	1			✓	D
12	1	13	1			✓		B
13	6	9			✓			A
14		14		1	✓			A-
15		15			✓			A
16		6	7	2			✓	F
17	2	12		1	✓			A
18		11	4	2			✓	C-
19	3	12			✓			A
20		13	2			✓		B
21		10	4	1		✓		C-
22		15			✓			A
23		12	3			✓		C
24		6	6	3			✓	F
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36								

INSTRUCTIONAL PROGRAM SUMMARY REPORT

This six-page document asks those who are responsible for an instructional program to summarize each of the following upon conclusion of the program:

1) Its overall purposes and characteristics;
2) Its most critical, terminal objectives for students;
3) Actual performance data for groups of students on each of those terminal objectives;
4) The specific indicators that were used to determine achievement of the objectives;
5) A brief ex post facto analysis of the program's processes;
6) A summary of its budgeted and actual costs; and
7) A set of specific recommendations for modifying its objectives or processes during a subsequent cycle of implementation.

Once developed, a **Program Summary Report** can be used by teachers and administrators for several purposes:

1) It can be used as a vehicle for explaining the actual content and benefits of instructional programs to students, parents, board members, and other teachers and administrators.
2) It can be used to review and evaluate the effectiveness of different instructional programs that are designed to achieve the same or comparable objectives.
3) It can be used as a basis for developing new plans for a subsequent cycle of each program.
4) It can be used to review and improve curricular scope and sequence and to share information about particularly effective program methods and materials.
5) It can be used to prepare a cumulative annual report that further summarizes the critical desired and actual outcomes of district programs and so serves as the district's staff input to Component Five — its documentation on the "what is" state of district programs.

Instructional Program Summary Report — Comments

25 Critical Terminal Objectives of the Program (see pg. 47)

The five objectives listed here are exactly the same as those listed in Instructor Clark's **Instructional Program Summary Plan**. In some cases, however, there may be substantial differences between the planned and actual programs.

Instructional Program Summary Report

Instructional Program Title and Code Earth Science 112-8-0804

Program Location Lincoln Junior High School Program Dates 9/10-6/11, 19___.

Approximate Number of Students Who Were Involved 78

Brief Program Description. In one or two paragraphs, describe the program—its overall outcomes, the major topics that were covered, and its relation to other programs. Earth Science was a general survey course designed to give the student an overall understanding of the planet Earth. Major topics were: Geology--Rocks & Minerals, Topography & Land Forms, Geologic History; Oceanography--Research, Seawater, Ocean Basins, Waves, Tides & Currents, & Sea Life; Meteorology--Composition & Structure of the Atmosphere, Energy Interactions, Weather, Hydrologic Cycle & Climate; and Astronomy--Stars & Galaxies, Solar System & Space Exploration. Lab procedures and skills are stressed in each unit. This was the third course in the Life, Physical and Science sequence.

Program Characteristics. Indicate how the program was actually implemented, either by checking one of the descriptions below or by writing in a more appropriate description.

1. **Instructional Requirements:**
   - X Students involved in the program moved through it as a total group.
   - ___ Students moved through the program at their own individual rates.

   Other:

2. **Time Requirements:**
   - X The program had definite beginning and ending dates and required approximately ___ weeks to complete.
   - ___ The beginning and ending dates of the program varied from student to student.

   Other:

3. **Achievement Requirements:**
   - X During the program, all students worked on all of its objectives; given time constraints, however, some of the students did not achieve all of the program's objectives.
   - ___ During the program, all students worked on each objective until they achieved it; given time constraints, however, some of the students did not have a chance to work on all of the program's objectives.

   Other:

Program Personnel. Carmen Clark--Teacher

25 Critical Terminal Objectives of the Program. List below up to eight of the program's critical terminal objectives. Include those objectives that were formally measured in terms of specific achievement indicators as well as those that were not systematically assessed. These may include objectives in the cognitive, affective, and psychomotor domains. Cross-reference them by code numbers to the objectives listed in the *Record of Instructional Program Objectives.*

O-1: General Science Goal

To develop an awareness of the social implications of scientific advancements

O-1: Geology--Rocks and Minerals

To understand the general composition and structure of the Earth from crust to core.

O-3: Oceanography

To determine by experimentation the chemical characteristics of sea water in comparison to fresh water.

O-4: Meteorology

To understand that the matter of which the atmosphere is composed, and the earth as well, are in continuous interaction with the sun's radiant energies.

O-3: Astronomy

To understand the basic structure and function of our solar system.

O- :

O- :

O- :

Summary of Student Performance: Number of students

who worked on the objective						who did not work on this particular objective	involved in the total program
and demonstrated achievement		but did not demonstrate achievement	and demonstrated				
before instruction (AB)	after instruction (AA)	(NA)	considerable effort (CE)	some effort (SE)	little effort (LE)		
2	17	2	12	6	3	3	24
4	19	1	15	5	4	0	24
0	18	5	9	9	5	1	24
6	15	0	16	15	0	3	24
2	18	4	7	12	5	0	24

Achievement Indicators. To the extent possible, describe the one or more indicators that were used to determine a student's achievement of the program's critical terminal objectives. In addition, if an objective had more than one achievement indicator, specify the decision rule that was used to determine student achievement. Abstract this information from the *Record of Instructional Program Objectives.*

Observable Act	Conditions or Givens	Level of Quality
Write a statement expressing your opinion & reasoning of 1 critical issue.	Given three Critical Issues in Science articles.	Standard report used. Teacher evaluation of analysis of issue.
Correctly label the layers of their boundaries.	Given a cross-sectional diagram of the earth from crust to core.	All labels correct.
Describe the compositional make up of each earth layer.	Given a blank sheet of paper.	Teacher evaluation.
Test sea water and fresh water for presence of calcium, sulfates, chlorides, ammonia, and organic matter	Given appropriate lab equipment and materials.	All samples match with the instructor's experiment.
Check the cause of heating the earth.	Given a sheet of paper.	All 10 correct.
Explain four types of heat transfer in the atmosphere.	Given a sheet of paper.	Teacher evaluation.
Diagram convection pattern on an island during late pm	Given a sheet of paper.	Correct match with text.
Draw a diagram of solar system. Label.	Given a sheet of paper.	All labeling correct.
Describe the body with respect to position from the Sun and other bodies.	Given a list of solar bodies.	Teacher evaluation.

Program Evaluation. Indicate which assessment procedures and which instructional procedures carried out in the program proved to be particularly effective, which did not, and why. Summarize the information already recorded in the program's weekly lesson plans.

Particularly Effective Procedures	Relatively Ineffective Procedures
1. For assessing student performance on the program's objectives: Pretesting on achievement indicators.	1. For assessing student performance on the program's objectives: Achievement Indicator for Astronomy need to be clarified and to make more specific.
2. For helping students achieve the program's objectives: A) Discussion of the television lectures. B) Having students read the "Critical Issues in Science" articles.	2. For helping students achieve the program's objectives: Discussion of Earth composition chart.

Summary of Program Costs

	Budget	Actual Cost	Difference
Personnel	$ 4,000	$ 4,000	$ 0
Materials and Supplies	50	67.50	+17.50
Equipment	0	0	0
Other	100	50.00	-50.
TOTAL	$ 4,150	$ 4,117.50	$ -33.50

Recommendations for Recycling the Program. Indicate specific changes that should be made during another cycle of the program. Summarize the information already recorded in Section Three of the *Record of Instructional Program Objectives* and throughout the program's weekly lesson plans.

---

1. Recommended changes in the program's objectives:

   Not for the next teaching cycle.

2. Recommended changes in the indicators and procedures for assessing student performance on the program's objectives:

   No changes at this time; however, careful attention should be given to Astronomy achievement indicators, which may need additional clarification. Perhaps another teaching cycle will provide more data.

3. Recommended changes in the instructional procedures used to help students achieve the program's objectives:

   Continue to find ways of increasing student-teacher interaction. The use of inquiry teams may facilitate this and Professor Jiminez at the State University has agreed to assist us with planning for this.

4. Recommended changes in the program's resources:

   Perhaps joining with Astronomy class from Eastern Junior High School to participate in Emerald University of Science and Industry's Planetarium workshop would be useful in meeting the Astronomy program objectives.

These materials were developed by staff of the SPECS Program within CASEA, the research and development unit of the Center for Educational Policy and Management (CEPM) at the University of Oregon. CEPM is supported in part by funds from the National Institute of Education (NIE). Opinions expressed in the materials, however, do not necessarily reflect policies or positions of either CEPM or NIE, and so no official endorsement by either organization should be inferred.

Individualizing Instruction

SPECS alone does not individualize instruction. It can, however, facilitate individualization in two ways. First, it can help clarify the question of precisely what is being individualized. And second, it can assist in the collection of data that are essential to individualization.

Assume that three students, Mario, Susan, and Rene, are all working toward the same objective in Instructor Clark's Earth Science class. They are all using the same instructional and curricular processes and they are all working within the same time constraints. One might conclude that there is no individualization in the classroom. However, such conditions actually allow Instructor Clark to individualize the achievement level for each student on the given objective.

In a second classroom situation, these students are given a pre-test on the objective. Based on the results, the teacher separates Mario from Susan and Rene because he is either not yet ready for the objective or he has already achieved it. A type of individualization has, therefore, occurred. The other two students, however, are working toward the same objective, by the same processes, and with the same time constraints. As in the first situation, Susan and Rene's achievement levels will inevitably vary.

In another situation, the instructional and curricular processes used to achieve a particular objective vary from student to student. While one student uses a self-instruction technique, another is tutored by the teacher; however, both are working toward the same objective. The time for working on the subject remains constant and the two students will inevitably reach different levels of achievement for the given objective.

In the fourth situation the same processes are used to achieve the same objectives for both students; however, time is allowed to vary so that each student can achieve a comparable level. Instructor Clark's Physical Science Two program in which students are able to work at their own speed is an example of this fourth classroom situation.

Usually, the term "individualized instruction" brings to mind this final classroom situation in which all students have the same objective, but there is variance in both the processes employed to achieve that objective and the time provided to work toward the objective. As a result, mastering the objective becomes the criterion of success, rather than completing a set of processes or devoting a specific period of time to its achievement. In this situation, each child, in effect, becomes an operating program. The only common requirement is that each student achieve the objectives planned for him/herself. The defined objectives, the processes used to achieve them, and the time provided are all tailored to the individual student.

What then is to be individualized — objectives, processes, time, mastery levels, or some combination of these? Which of these stylized classroom situations is desired? These are some of the critical questions which SPECS forces one to answer.

Regardless of the kind of individualization desired, the SPECS instructional materials, particularly the **Record of Student Performance**, can be applied either to groups of students or to individual students and can be used to specify the **desired** and **actual** instructional outcomes and processes for each child as well as for groups of children in a classroom.

After completing the SPECS instructional materials, one might ask how this accumulation of data can be used to report student progress to parents, counselors, teachers, administrators, and other interested persons. Although there are several answers to this question we can look at the information which these documents provide and also the ways in which some district personnel have used this data.

Two of the documents, the **Record of Student Performance** and the **Instructional Program Summary Report**, provide base data for developing a variety of reports on student progress.

The **Record of Student Performance** provides a variety of performance data for each student including:

1) Pre- and/or post-test scores on each achievement indicator in each unit;
2) Teacher interpretation of those scores in terms of achievement;
3) Teacher judgment of the degree of effort demonstrated during each entire unit; and
4) Miscellaneous assessments on quizzes and/or homework assignments.

At the same time, the **Instructional Program Summary Report** highlights the most critical of these performance data and, in addition, indicates teacher judgment of each student's **effort** demonstrated during the entire program.

Even more important than providing base-data for developing reports on student progress, these two sets of materials provide performance data on achievement indicators for each student — data that are far more useful than traditional letter grades when:

1) Reporting to parents;
2) Maintaining cumulative records;
3) Counseling students;
4) Organizing classes;
5) Informing other teachers; and
6) Helping students self-evaluate their own progress.

Furthermore, this is not to suggest that such student progress reports should replace teacher observation reports, but in fact, the two can be joined together to provide maximum information about student progress toward various objectives.

Four examples have been included to illustrate how "report cards" might be formatted when based on the actual objectives of a particular instructional unit or program. The report cards shown here were developed by teachers in the Arithmetic Program of Emerald District's Good Elementary School.

Report Card #1

The first report card indicates the student's pre- and/or post-test scores for each objective as well as the results of student achievement of each performance objective. The latter indicates whether the student **achieved** the objective **before** (AB) or **after** (AA) instruction, or, if s/he did not achieve it at all (NA).

Although this teacher chose not to do so, a final letter grade could also have been included on this report card.

SIXTH GRADE ARITHMETIC
First REPORT PERIOD

Name Kim Dozono

OBJECTIVES	ACH	REPORT PERIODS 1	2	3	4
1. Can add ten fractions with common denominators and 80% accuracy.	Pre	10%			
	Post	85%			
	RESULTS	AA			
2. Can subtract ten fractions with common denominators and 80% accuracy.	Pre	0%			
	Post	60%			
	RESULTS	NA			
3. Can multiply ten fractions with common denominators and 80% accuracy.	Pre	0%			
	Post	20%			
	RESULTS	NA			
4. Can ...	RE				

Report Card #1

Report Card #2

The second example shows a format for indicating a student's progress on a set of year-long objectives. In a prose statement, the teacher has indicated the level of quality for each achievement indicator, how well the student performed at the beginning of the year, and the current status of the student's performance.

FIRST GRADE ARITHMETIC
Third REPORT PERIOD

Name José Gonzales

1. Our goal is that by June the student can write correct answers to 30 addition problems in two minutes.

   In September, the student could write correct answers to 4 problems; the student can now write correct answers to 22 problems.

2. Our goal is that by June the student can write correct answers to 25 subtraction problems in two minutes.

   In September, the student could write correct answers to 0 problems; the student can now write correct answers to 7 problems.

3. Our goal is that by June the student can write correct

Report Card#2

Report Card #3

In the third example the report card format is more complex. It allows teachers to do two things: 1) increase the difficulty of each achievement indicator during the year; and 2) indicate how rapidly each student was able to satisfy each indicator.

Note that Aletha is falling behind in achieving the first objective. She was able to read and write 0-10 on schedule — by the end of the first report period — but it has taken her one more report period than desired to read and write 0-20. By contrast, she is ahead of schedule on the second objective, for she was able to read 3-place integers correctly by the end of the second, rather than the third, report period.

This type of report card was found to be very useful in Aletha's second grade arithmetic class since students were allowed to progress at their own rates throughout the program.

SECOND GRADE ARITHMETIC
Third REPORT PERIOD

Name Aletha Keller

1. Objectives are listed down the left side.
2. The level of quality for each objective is 100% correct, but the achievement Indicator for each objective increases in difficulty during the year.
3. The chart indicates when the student achieved the desired behaviors.

OBJECTIVES		REPORT PERIODS 1	2	3	4
a. Can read number words and write correct numerals.	Behavior Desired	0-10	0-20	0-50	0-100
	When ACH	First	third		
b. Can read integers correctly	Behavior Desired	2 place		3 place	
	When ACH	First		Second	
c. Can read	Behavior Desired				

Report Card #3

Report Card #4

The fourth report card format indicates still another way to vary desired performance levels during the year. In the third example, the level of quality for each achievement indicator remained constant at 100% accuracy but the difficulty of the achievement indicators was increased throughout the report periods. In this example, the reverse is true: the desired behavior remains constant throughout the year, while the level of quality required to satisfy the achievement indicator increases in difficulty. That is, the definition of achievement increases in difficulty throughout the year. A real advantage of this particular format is that the desired behaviors can be reinforced several times during the year.

FOURTH GRADE ARITHMETIC
Third REPORT PERIOD

Name. Mabrit James

1. Objectives are listed down the left side.
2. The level of quality necessary to achieve each objective increases with each report period
3. The chart indicates the student's achievement level for each report period.

OBJECTIVES		Report Periods 1	2	3	4
a. Can recite addition facts in four minutes.	Desired Level	70%	80%	90%	90%
	ACH Level	70	75	95	
b. Can solve simple linear equations.	Desired Level		70%	90%	95%
	ACH Level		50	90	
c. Can multiply with a 4-digit multiplicand and a 1-digit multiplier.	Desired Level			80%	95%
	ACH Level			90	

Report Card #4

Program Assessment

In Emerald's Blackwood Senior High School, the SPECS **Instructional Program Summary Plan** and **Instructional Program Summary Report** were reviewed on at least two occasions, once by a department chairperson and once by the high school principal. As a result of the review process, teachers and administrators were faced with the decision of approving the programs and continuing with their implementation or asking the programs' developers for further refinement which would again be reviewed. The following section includes questions designed to assist those responsible for the programs in their planning and evaluation efforts.

INSTRUCTIONAL PROGRAM SUMMARY PLAN ANALYSIS

1. Do the critical terminal objectives in the **Plan** represent the most critical of the program's objectives?

2. Do the critical terminal objectives in the **Plan** describe what students should know, understand, and appreciate?

3. As stated, do the achievement indicators in the **Plan** represent appropriate and valid measures of their related critical terminal objectives?

4. Does each achievement indicator in the **Plan** include a performance indicator, conditions for evaluation, and a level of quality?

5. Do the achievement indicators in the **Plan** represent a reasonable mix of the affective, cognitive, and psychomotor domains of learning?

6. In the **Plan**, is the information presented about "planned instructional processes" sufficiently detailed that another professional educator could successfully implement the program?

7. In the **Plan**, are appropriate and adequate **evaluative** processes identified for evaluating student performance on each performance objective?

8. Are appropriate and adequate resources identified in the **Plan** for achieving the program's objectives?

INSTRUCTIONAL PROGRAM SUMMARY REPORT ANALYSIS

1. Is there evidence that the critical terminal objectives described in the **Plan** have been revised? If so, do the achievement indicators in the **Report** appropriately reflect these changes?

2. Is there evidence that, although the critical terminal objectives described in the **Plan** have been retained, changes have been made in their related achievement indicators?

3. In cases where revisions have occurred in the achievement indicators, have appropriate revisions been made in the processes planned to master the new achievement indicators?

4. Has each student in the program been accounted for in terms of progress toward each achievement indicator?

5. Do the data on group outcomes indicate that as many participants as might reasonably be expected to do so have satisfied the objectives?

6. Has an effort been made to identify actual processes — whether instructional, administrative, or evaluative — that proved to be particularly **effective** during the program?

7. Has an effort been made to identify actual processes — whether instructional, administrative, or evaluative — that proved to be particularly **ineffective** during the program?

8. Were the program's actual costs reasonably in line with its budgeted resources?

PROCESSES AND OUTCOME ANALYSIS

1. Are appropriate and adequate **evaluative** processes identified for evaluating student performance on each achievement indicator?

2. As stated, is the chronological sequencing of pre- and post-tests appropriate and explicit?

3. Are appropriate and adequate **instructional/administrative** processes identified for achieving each achievement indicator?

4. Has adequate provision been made to identify students who possess mastery **before** instruction (or before the activity)? For those who do, has provision been made for alternative instructional activities?

5. Are appropriate and adequate **resources** identified for achieving the objective of the unit or program?

6. Has **each** student been accounted for in terms of attainment toward **each** achievement indicator?

7. Have additional outcome data as required by the district been collected for each student — measures of effort, quiz scores, and so forth?

8. Do the data on group outcomes indicate that as many students as might reasonably be expected to do so have achieved the objectives?

9. Is there evidence of summarized data for the actual outcomes of the total unit or program?

10. Is there evidence of an intent to change the critical terminal objectives or achievement indicators of the program as a result of this implementation cycle?

11. Has an effort been made to identify some actual processes — whether instructional, administrative, or evaluative — that proved to be particularly **effective** or **ineffective** during the unit or program?

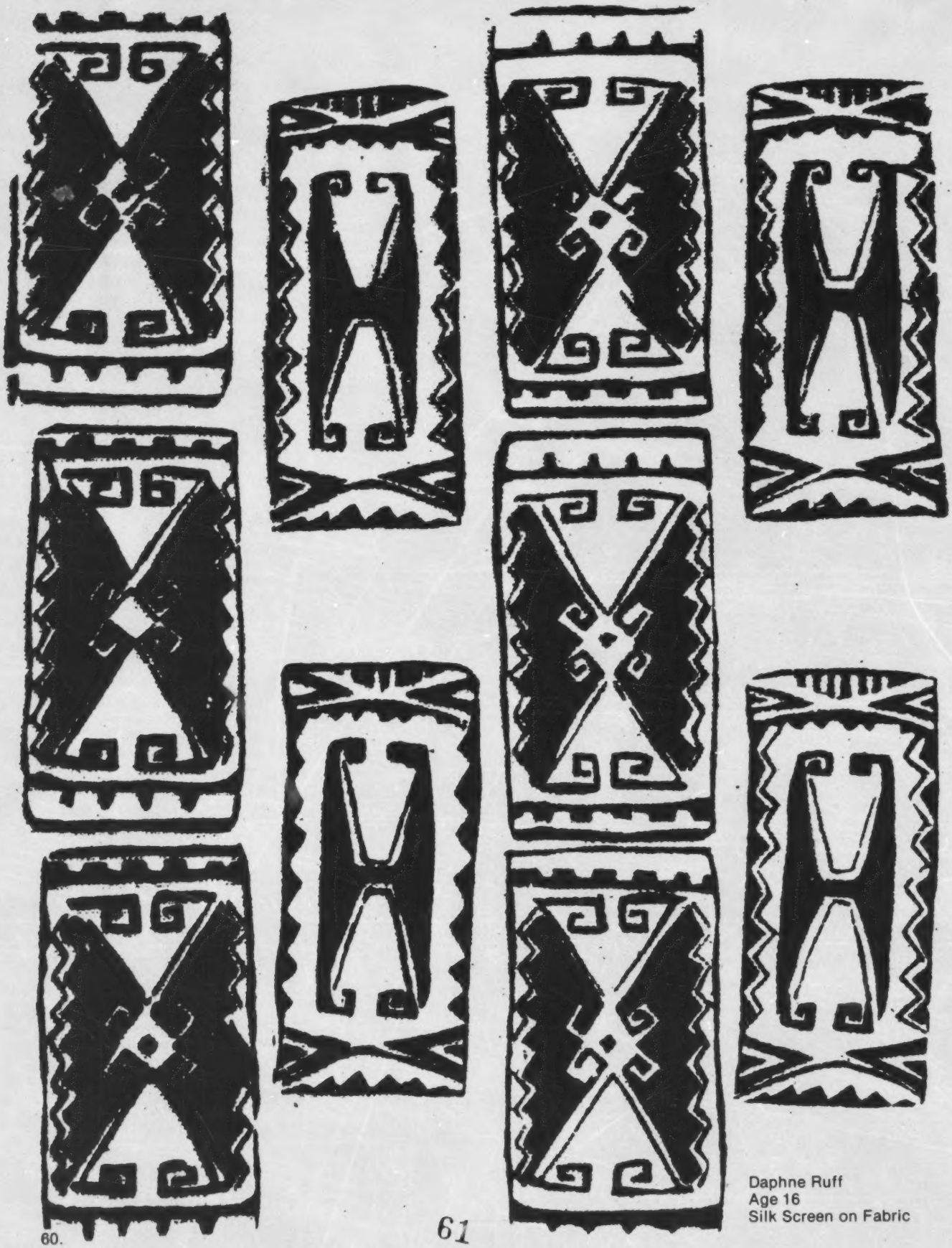
12. Is there evidence of an intent to change the resources available to the unit or program in relation to other planned changes?

If a district's budget cycle must control its cycle for program planning and review, it is possible to plan next year's programs during the winter and spring of the current school year. Some data about past program performance will be available to influence this planning effort, but performance data relevant to the last half of the current school year will necessarily be based on conjecture.

One alternative is to divide each school year into two cycles of program planning and review, so that as one semester of a program is being implemented, the second semester can be planned and reviewed. The budget for the first semester of the next year can be based on past data about the program; the budget for the second semester can be based either upon last year's actual second semester costs or upon this year's anticipated second semester costs. Given the current cycle for budget preparation in school districts, SPECS recommends that school districts **not** try **immediately** to synchronize that cycle with their cycle for program planning and review. Rather, operating budgets should be based upon projections of current program costs and the plans for these programs — their **desired** outcomes, processes, and costs — be constrained accordingly.

Another important consideration for the school or district is the decision of whom to involve in assessing the planning efforts. Such personnel might include:

1) Teachers who have been involved in the planning;
2) Evaluators responsible for assessing the compatibility of actual outcomes to projected outcomes;
3) Principals or department chairpersons responsible for supervision; and
4) Other teachers who are considering implementing the same program or course.



60.

Daphne Ruff
Age 16
Silk Screen on Fabric

4. Summarizing Outcome Data

In our discussion of Component Three the focus has been upon program planning and evaluation of a single program be it a first grade reading program in an elementary school, or an algebra course in a secondary school. We have seen how the SPECS documents for detailed planning — the **Record of Instructional Program Objectives**, the **Weekly Lesson Plans**, and the **Record of Student Performance** — may be used in recording the objectives, processes, and outcomes of such a program or course. The two summary documents — the **Instructional Program Summary Plan** and the **Instructional Program Summary Report** — focus similarly on the most critical outcomes, desired and actual, of a single program or course.

However, carrying out detailed planning and collecting information about student performance for each program or course in a school district does not necessarily guarantee interrelationships among those programs. Nor does it guarantee that each program will be related in some way to the district's total curriculum for the content area of which the program or course is only a part. For instance, carrying out detailed planning and student performance data collection for two consecutive courses in a district's total program does not guarantee a relationship between the objectives of the two courses, nor does it guarantee that the objectives of either course "fit" into the set of program objectives (K-12) for the program. What is needed is a set of procedures for relating the desired and actual outcomes of individual courses to each other and to all courses in the program of which they are a part.

In order to get a handle on this task one must consider the problem of adding the **actual** outcomes of three different first grade reading programs. Only if the program objectives which are general in nature are common to all three programs is it relatively easy to add their outcomes.

The major disadvantage of this approach is that common program objectives impose a constraint on each program — a constraint that may neither be desirable to teachers nor educationally sound for students. At the same time, however, if each course has its own unique objectives the task of adding their outcomes begins to resemble adding apples, bananas, and oranges.

There are, at least, two alternatives to this apparent "all or none" situation — alternatives that attempt to preserve a workable balance between the needs for program comparability and program flexibility.

One of these is to make common the **critical program objectives** and achievement indicators of those objectives for the three first grade reading programs. Actual outcomes could then be simply added together. At the same time, however, each program's sub-objectives — or daily objectives — and its classroom procedures could be different.

A second alternative is to make the program objectives common to the three programs, but leave the choice of achievement indicators to the discretion of each teacher. This second alternative will work, however, only if each objective's achievement indicators can be assumed to be equally valid measures of the objective. The data reflecting achievement of the common program objectives can then be added together.

In addition to adding together outcome data from comparable programs, a district must also be able to summarize the outcomes of its various content areas such as mathematics K-12. One way this may be achieved, particularly when the individual courses in the program are sequential, is to focus on the outcomes of the last program in the sequence. For instance, the outcomes of the sixth grade reading program can become the **terminal** outcomes of an entire elementary school reading program. When the individual courses in a program are not sequential — such as the courses in a high school social studies program — a more appropriate approach would be to select critical outcomes from each course in the program. The resulting list then describes the terminal outcomes of the complete program.

Obviously, this task of combining outcome data from the many programs and courses in a school district requires considerable care. And it becomes more and more difficult as the number of common program objectives decreases.

To provide more background to the task, six possible alternatives have been illustrated. These examples show how student performance data may be combined for individual courses taught by several teachers or for entire programs within a school. Each task is divided into four sections:

1) The general intentions or purposes;
2) The situation;
3) A set of specific intentions and a description of the processes used to achieve them; and
4) A description of the product.

TASK 1

General Intention:	The Situation:
To improve communication among teachers by sharing information about course plans and teaching procedures.	1) Two or more teachers; each teaching a Grade 5 reading course in the same school. 2) The objectives for each course are different. 3) The procedures used by the teachers to implement their courses are different.
Specific Intentions:	**Processes:**
September 1) To share information concerning the course objectives, planned processes, and required resources.	September 1) Each teacher develops a **Program Summary Plan** and shares the information with his/her colleagues.
June 2) To share information concerning the course objectives, actual processes, and resources used.	June 2) Each teacher develops a **Program Summary Report** and shares the information with his/her colleagues.

The Product:

Individual Courses with Unique Sets of Objectives

$C_1 \begin{bmatrix} O_1^* \\ O_2 \\ O_3 \\ O_4 \\ O_5 \end{bmatrix} \quad C_2 \begin{bmatrix} O_6 \\ O_7 \\ O_8 \\ O_9 \\ O_{10} \end{bmatrix} \quad C_3 \begin{bmatrix} O_{11} \\ O_{12} \\ O_{13} \\ O_{14} \\ O_{15} \end{bmatrix}$

SAME BEFORE and AFTER IMPLEMENTATION

*O - Objective
C - Course

TASK 2

General Intentions:	The Situation:
1) To improve communication among teachers by sharing information about course plans and teaching procedures; and 2) To develop common critical course objectives to facilitate the reporting of student performance data during the next implementation cycle.	1) Two or more teachers; each teaching a Grade 5 reading course in the same school. 2) The objectives for each course are different. 3) The procedures used by the teachers to implement their courses are different.

Specific Intentions:	Processes:
September 1) To share information and concerning the course objectives, planned processes, and required resources.	September 1) Each teacher develops a **Program Summary Plan** and shares the information with his/her colleagues.
June 2) To share information concerning the course objectives, actual processes, and resources used.	June 2) Each teacher develops a **Program Summary Report** and shares the information with his/her colleagues.
3) To derive a set of common, critical objectives for the course to be used by all teachers of that course during its next cycle.	3) The teachers working together develop a joint **Program Summary Plan** listing a set of common, critical objectives for the course.

The Product:

Individual Courses Having Unique Sets of Objectives	A Set of Common Critical Course Objectives
$C_1 \begin{bmatrix} O_1 \\ O_2 \\ O_3 \\ O_4 \\ O_5 \end{bmatrix}$ $C_2 \begin{bmatrix} O_6 \\ O_7 \\ O_8 \\ O_9 \\ O_{10} \end{bmatrix}$ $C_3 \begin{bmatrix} O_{11} \\ O_{12} \\ O_{13} \\ O_{14} \\ O_{15} \end{bmatrix}$	$\begin{bmatrix} CO_1^* \\ CO_3 \\ CO_9 \\ CO_{13} \end{bmatrix}$
BEFORE IMPLEMENTATION	AFTER IMPLEMENTATION

*CO - Common Objective

TASK 3

General Intentions:	The Situation:
1) To improve communication among teachers by sharing information about course plans and teaching procedures; 2) To develop common course objectives to facilitate the reporting of student performance data; 3) To collect and combine student performance data on a set of common course objectives; 4) And to modify course plans based upon the information generated.	1) Two or more teachers; each teaching a Grade 5 reading course in the same school. 2) The objectives for each course are different. 3) The procedures used by the teachers to implement their courses are different.

Specific Intentions:	Processes:
September 1) To share information concerning the course objectives planned processes, and required resources.	September 1) Each teacher develops a **Program Summary Plan** and shares the information with his/her colleagues.

2) To develop a set of common, critical objectives to be used by all teachers of that course beginning with its implementation in September.

June
3) To collect data on student performance on each common, critical objective and to combine the data.

4) To review the year's results and to recommend modification of the common, critical objectives for the course during its next cycle.
5) To share information concerning actual processes and resources used to implement the course and to recommend changes, if any, for its next cycle.

2) The teachers working together first develop a joint **Program Summary Plan** listing a set of common, critical objectives for the course. For each objective, teachers may individually develop achievement indicators that are equally valid measures of achievement, **or** they may develop a common set of indicators.

June
3) The teachers working together develop a joint **Program Summary Report** that displays group performance data for each common, critical objective.
4) Teachers record changes in the course objectives on the joint **Program Summary Report**.

5) The teachers record changes in processes and/or resources for the course's next cycle on the joint **Program Summary Report.**

The Product:

Combined Performance Data for a Set of Common, Critical Course Objectives

$$\begin{bmatrix} CO_1 \\ CO_2 \\ CO_3 \\ CO_4 \end{bmatrix}$$

BEFORE IMPLEMENTATION

A Modified Set of Common, Critical Course Objectives

$$\begin{bmatrix} MCO_1^* \\ MCO_2 \\ MCC_3 \\ MCO_4 \end{bmatrix}$$

AFTER IMPLEMENTATION

*MCO - Modified Common Objective

TASK 4

General Intention:

To improve communication among teachers of a program by sharing information about course plans and teaching procedures.

The Situation:

1) A group of teachers in the same elementary school, or the same department of a secondary school, who teach a given program (e.g., Reading, Grades 1-6).
2) The program consists of a set of individual courses.
3) Each course is taught by two or more teachers who use a set of common, critical objectives.

Specific Intentions:	Processes:
September 1) To share information concerning the common, critical objectives of each course in the program.	September 1) Teachers of each course (Grade 1 Reading) prepare a joint **Program Summary Plan** and share the information with all other teachers in the program (e.g., Grade 1 Reading teachers share with Grade 2-6 Reading teachers).
2) To share information concerning the planned assessment and instructional procedures and desired resources of each course in the program.	2) Teachers of each course (Grade 1 Reading) prepare a joint **Program Summary Plan** and share the information with all other teachers in the program.
June 3) To share information concerning the common, critical objectives, actual procedures, and student achievement related to each course in the program.	June 3) Teachers of each course prepare a joint **Program Summary Report** and share the information with all other teachers in the program.

The Product:

A Program Consisting of Individual Courses

$C_1 \begin{bmatrix} O_1 \\ O_2 \\ O_3 \\ O_4 \end{bmatrix} \quad C_2 \begin{bmatrix} O_5 \\ O_6 \\ O_7 \\ O_4 \end{bmatrix} \quad C_3 \begin{bmatrix} O_9 \\ O_{10} \\ O_{11} \\ O_{12} \end{bmatrix}$

BEFORE and AFTER IMPLEMENTATION

TASK 5

General Intentions:	The Situation:
1) To improve communication among teachers of a program by sharing information about course plans and teaching procedures; and 2) To develop program objectives to facilitate the reporting of student performance data during the next implementation cycle.	1) A group of teachers in the same elementary school, or in the same department of a secondary school, who teach a given program (e.g., Reading, Grades 1-6). 2) The program consists of a set of individual courses. 3) Each course is taught by two or more teachers who use a set of common, critical objectives.

Specific Intentions:	Processes:
September 1) To share information concerning the critical objectives of each course in the program.	September 1) Teachers of each course prepare a **joint Program Summary Plan** and share the information with all other teachers in the program. (e.g., Grade 1 Reading teachers share with Grade 2-6 Reading Teachers).

2) To share information concerning the planned assessment and instructional procedures and desired resources for each course in the program.
June
3) To share information concerning the critical objectives, actual processes, and student achievement related to each course in the program.
4) To derive a set of critical, program objectives for use in the program's next cycle, that spans all the courses in the program and which addresses: (a) the relevance of individual course objectives and their relationship to necessary knowledge and skills; and (b) the relevance of individual course objectives as they complement the objectives of all other courses in the program.

2) Teachers of each course prepare a joint **Program Summary Plan** and share the information with all other teachers in the program.
June
3) Teachers of each course prepare a joint **Program Summary Report** and share the information with all other teachers in the program.
4) Teachers use the joint **Program Summary Reports** prepared for individual courses to develop a set of critical program objectives. The set may consist of:

a) The **union** of the sets of critical objectives developed for the individual courses; or

b) Course objectives drawn selectively from each of the sets of critical objectives developed for the individual courses; or

c) A completely new set of objectives, more general in nature than the objectives of individual courses, and which addresses the program as a whole.

5) Teachers prepare joint **Program Summary Plans** — one for each individual course — based upon the set of program objectives.

The Product:

A Program Consisting of Individual Courses

$C_1 \begin{bmatrix} O_1 \\ O_2 \\ O_3 \\ O_4 \end{bmatrix} \quad C_2 \begin{bmatrix} O_5 \\ O_6 \\ O_7 \\ O_8 \end{bmatrix} \quad C_3 \begin{bmatrix} O_9 \\ O_{10} \\ O_{11} \\ O_{12} \end{bmatrix}$

BEFORE IMPLEMENTATION

Three Possible Sets of Program Objectives
The set consists of the **union** of the sets of critical objectives developed for individual courses.

1.

$C_1 \begin{bmatrix} O_1 \\ O_2 \\ O_3 \\ O_4 \end{bmatrix} \quad C_2 \begin{bmatrix} O_5 \\ O_6 \\ O_7 \\ O_8 \end{bmatrix} \quad C_3 \begin{bmatrix} O_9 \\ O_{10} \\ O_{11} \\ O_{12} \end{bmatrix}$

The set consists of course objectives **selected** from each of the sets of critical objectives developed for individual courses.

2.

$$\begin{bmatrix} CO_1 \\ CO_2 \\ CO_7 \\ CO_8 \\ CO_{11} \end{bmatrix}$$

The set consists of objectives **not** taken from the sets of objectives developed for individual courses.

3.

$$\begin{bmatrix} O_a \\ O_b \\ \vdots \\ O_p \end{bmatrix}$$

AFTER IMPLEMENTATION

TASK 6

General Intentions:	**The Situation:**
1) To improve communication among teachers of a program by sharing information about course plans, teaching procedures, and student performance; 2) To provide summary data about a program — its objectives, procedures, and outcomes; 3) To develop new plans for a program based upon information obtained from a previous cycle of implementation; 4) To improve a program's scope and sequence.	1) A group of teachers in the same elementary school, or in the same department of a secondary school, who teach a given program (e.g. Reading, Grades 1-6). 2) The program consists of a set of individual courses. 3) Each course is taught by two or more teachers who use a set of common, critical objectives.
Specific Intentions:	**Processes:**
September 1) To share information concerning the critical objectives of individual courses in the program. 2) To share information concerning the planned assessment and instructional procedures and the required resources of each individual course. 3) To derive a set of critical, program objectives for use in September, that spans all the courses in the program and which addresses:	September 1) Teachers of each course prepare a joint **Program Summary Plan** and share the information with all other teachers in the program. 2) Teachers of each course prepare a joint **Program Summary Plan** and share the information with all other teachers in the program. 3) Teachers use the joint **Program Summary Plans** prepared for individual courses to develop a set of critical program objectives. The set may consist of:

(a) the relevance of individual course objectives and their relationship to necessary knowledge and skills; and
(b) the relevance of individual course objectives as they complement the objectives of all other courses in the program.

a) The **union** of the sets of critical objectives developed for individual courses; or

b) Course objectives drawn selectively from each of the sets of critical objectives developed for individual courses; or

c) A completely new set of objectives, more general in nature than the objectives of individual courses, and which addresses the program as a whole.

June

4) To collect student performance data on the critical objectives of each individual course and to record the data for the set of program objectives.
5) To review the year's results and to recommend desired modifications of individual course objectives and/or program objectives.

June

4) Teachers prepare joint **Program Summary Plans** — one for each individual course — based upon the set of program objectives.
5) Teachers of individual courses pare a joint **Program Summary Report** for each individual course in the program and record the student performance data as follows:

a) For program objectives derived in 1): The **Program Summary Report** for the program lists the student performance data obtained for each individual course;

b) For program objectives derived in 2): The Program Summary Report for the student performance data obtained for the corresponding course objectives;

c) For program objectives derived in 3): Student performance data cannot be obtained from data for individual courses. If this approach is used, separate indicators/tests will be necessary.

6) To share information concerning actual procedures and resources used in implementing each individual course and to recommend any changes for the next implementation cycle.

6) Teachers record recommended changes in the course objectives on the appropriate **Program Summary Report** prepared for an individual course; and record changes in the program objectives on the **Program Summary Report** prepared for the program.
7) Teachers record changes on the appropriate **Program Summary Report** prepared for individual courses.

The Product:

Three Possible Sets of Critical Program Objectives

The set consists of the **union** of the sets of critical objectives developed for individual courses.

1. $\begin{bmatrix} C_1 & \begin{bmatrix} O_1 \\ O_2 \\ O_3 \\ O_4 \end{bmatrix} & C_2 & \begin{bmatrix} O_5 \\ O_6 \\ O_7 \\ O_8 \end{bmatrix} & C_3 & \begin{bmatrix} O_9 \\ O_{10} \\ O_{11} \\ O_{12} \end{bmatrix} \end{bmatrix}$

The set consists of objectives **selected** from each of the sets of critical objectives developed for individual courses.

2. $\begin{bmatrix} CO_1 \\ CO_3 \\ CO_5 \\ CO_6 \\ CO_{11} \\ CO_{12} \end{bmatrix}$

The set consists of objectives not taken from the sets of critical objectives developed for individual courses.

3. $\begin{bmatrix} O_a \\ O_b \\ O_p \end{bmatrix}$

BEFORE IMPLEMENTATION

A Revised Set of Critical Program Objectives

The set may be obtained by revision or some combination of (a), (b), or (c).

$\begin{bmatrix} \quad \end{bmatrix}$

AFTER IMPLEMENTATION

Jenny Loughlin
Age 16
Photograph (enlargement)

5. Benefits

Upon considering the implementation of Component Three of SPECS one might naturally ask, "So what?" What are the benefits of such planning and evaluation? How will the district, school or classroom be affected by such activity? Is it really worth the work involved?

While the answers to these and similar questions can only be provided by the experience of individual districts, a number of benefits can accrue which will be realized over time and to varying degrees by all district personnel. Benefits related to individualized instruction were included in an earlier section of this booklet; however, an additional listing of the primary benefits which a district can expect is provided here.

A Clearly Defined Curriculum

When Component Three is implemented at all grade levels for all students in all subjects, the district has achieved a totally objective-based curriculum. The articulation of objectives in K-12 is not just a potential benefit, but rather a real and practical benefit. Frequently, students' expected outcomes are arrayed implicitly; however, it is much more valuable to have them made explicit. This enables parents, board members, other teachers and most important, the students themselves, to know exactly what is expected.

An Accurate Performance Record

A cumulative record of student performance provides a valuable diagnostic tool for teachers and other educational personnel (counselors, consultants, etc.). A fully operational system provides a record of every objective a student has achieved during her/his years in school.

Increased Communication

TEACHER-TEACHER

Often teachers neglect to share their methods and strategies with their colleagues and seldom are they able to share them as they are related to specific objectives. As objectives are articulated, they become available to all who are interested in reading them. Once teachers have shared objectives, they can begin to discuss their plans for meeting those objectives.

In addition, teachers will now have before them a time and objective chart which points out the major areas of instruction and the approximate time when each of these areas will be taught.

The sharing of this information between teachers will enable each teacher to review her/his own program objectives and then, make appropriate decisions about 1) the extent to which students need to be exposed to lower level material, and 2) any gaps in the continuity of sequencing related objectives.

Furthermore, a teacher who is receiving a new student will be provided with information regarding the materials and skills to which the student has been exposed during the year.

TEACHER-ADMINISTRATOR

Frequent evaluation of programs by the professional staff can be carried out in an organized and easily managed format. Detailed data regarding student performance can also assist teachers and administrators in reviewing the current programs. Such a review may call for drastic changes in the curriculum or it may reaffirm the teachers' confidence in their present curriculum.

TEACHER-PARENT

Teachers are able to discuss with parents, specifically what work has been completed and how this has been accomplished. For example a parent can be told that her/his child has completed 9 out of 10 required problems which measure the ability to compute using a slide rule. This information is far more specific and therefore more valuable than simply being informed that the student received a "passing" grade in Algebra or that the teacher "enjoyed having this student in the class."

Use of Physical Resources

Again, as the discussion of objectives brings about a discussion of teaching processes, teachers become aware of one another's needs for physical resources. For example, they may discover that filmstrips, Cuisenaire rods, or cassette tapes which are appropriate for meeting a specific objective at one grade level may also be appropriate for meeting a similar objective in another grade level.

Individualized Instruction

The **Record of Instructional Program Objectives** allows teachers to decide if a student must meet **all** of the achievement indicators for a specific instructional objective or only part of them. Therefore, once a teacher and student have agreed that the student will achieve a particular objective, they can also mutually agree on the achievement indicators most appropriate for the student's needs.

Teacher-Defined Minimum Objectives

SPECS is merely a format for planning and evaluating instruction in which there is no one set of prescribed objectives that students must meet; rather, that is left to the discretion of those doing the actual planning, teaching, and evaluating.

Professionalism

Specifically, teachers prepare plans which clearly show what they are attempting to teach, the processes which they are using to ensure that the content is presented, and the procedures which are followed in evaluating student performance. Each of the steps in planning and evaluating will increase the teacher's awareness of her/his strengths and weaknesses in teaching to particular objectives.

Summary

This booklet was designed to help instructional personnel implement the planning and evaluation component of SPECS. Attempts have been made to clarify planning and evaluation, describe the SPECS instructional materials, offer formats for reporting program outcomes, and present potential benefits which might occur from using SPECS. Regardless of the content of SPECS, the system is useful to instructional personnel only as they are aware of their organization's needs, the capabilities of SPECS and their own abilities to match the two.